

SECTION 3

CURRENT ENVIRONMENT

This Section is intended to provide interested parties with an overview of the current telecommunications environment managed by the Department of General Services, Telecommunications Division.

3.1. State Telecommunications Networks and Service

The Government of California is one of the largest telecommunications customers in the world. The State possesses a vast and sophisticated telecommunications infrastructure made up of multiple agency networks. The infrastructure reflects the complexity of the Government itself and the diverse missions of its agencies.

Of the total state expenditure for telecommunications, the Department of General Services, Telecommunications Division (DGS/TD) has direct management control over approximately \$68 million a year of telecommunications services. Short term actions may increase this by several million. Included are long distance service, toll free service, calling card service, consolidated local services such as Centrex and CentraNet, voice mail, frame relay services, building wiring and consulting services. This comprehensive suite of services (Figure 3.1), known as CALNET, is provided through a combination of state owned equipment and private sector partnerships. DGS/TD offers this suite of services to California state, county, local, and non-profit tax-supported agencies.

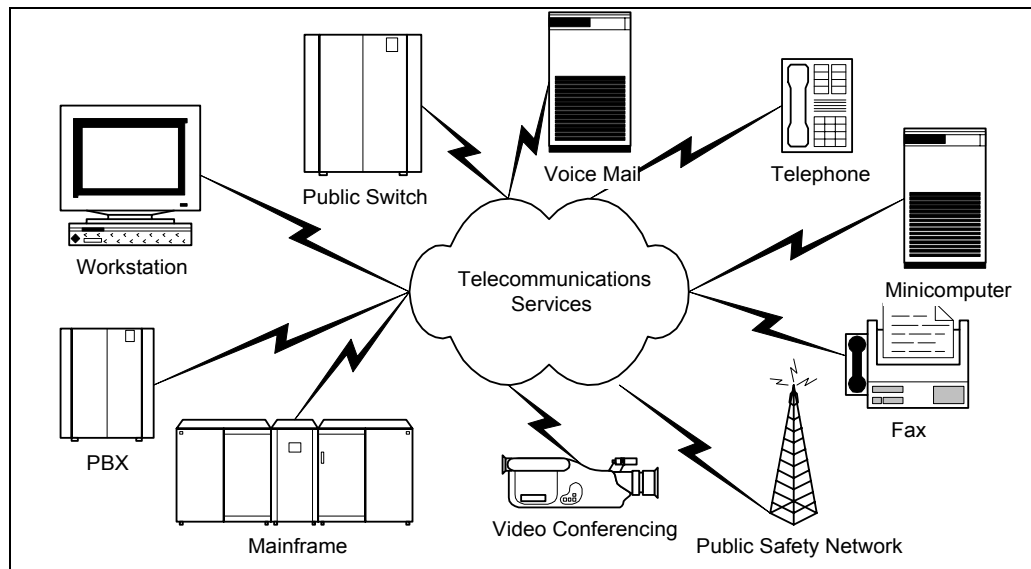


Figure 3.1: Overview of Services

From the \$68 million a year of managed services, DGS/TD bills for only \$30 million a year worth of services directly to its customer base. These are principally provided using equipment and services acquired through the CALNET contract with GTE and other contractors. Approximately 84% of voice services for all State agencies are provided by DGS/TD or through contracts administered by the DGS/TD (based upon review of the records of telecommunications firms handling non-Telecommunications Division provided voice traffic). However, the majority of data and video services are provided by the private sector independent of the state owned CALNET resources using separate contracts directly to individual agencies or through their supporting data centers.

In addition to the consolidated suite of services provided by the DGS/TD, many major state agencies operate private telecommunications networks. Some of these agencies are; California Department of Transportation (CalTrans), California Highway Patrol (CHP), Department of Water Resources (DWR), California Department of Corrections (CDC), Department of Finance (DOF), Franchise Tax Board (FTB), Employment Development Department (EDD), Department of Justice (DOJ), Department of Consumer Affairs (DCA), California State University (CSU), University of California (UC), State Legislature, and the California State Lottery. Other agencies have also purchased voice, data or video conferencing services through providers other than DGS/TD's consolidated services and private sector contracts. It is DGS/TD's intention as the consolidator of the state's telecommunications services to leverage the state's buying power as a single customer and realize efficiencies of common management and resource sharing.

3.1.1. Overview of CALNET Suite of Services

The following is a representative listing of the services made available through the CALNET suite of services (estimated annual value of \$68 million a year):

3.1.1.1. Long Distance

The long distance services consist of IntraLATA, IntraState, InterState, and international calling.

IntraLATA long distance calling is provided either directly via CALNET or through agreements with GTE, Contel, and Pacific Bell within their franchised territories or by the independent telephone companies under their normal tariffs. DGS/TD has no estimated value of the services provided by the independent telephone companies outside of the existing agreements. State agencies may use these agreements and tariffs for their intraLATA long distance calling not carried by CALNET. These intraLATA services are also available to local government agencies such as cities, counties, or state colleges and universities if they choose.

The IntraState calling is provided principally through a combination of state owned equipment acquired through the CALNET contract, and services acquired from the private sector. These services are rated and billed to the customers by the DGS/TD.

Included with the long distance services are 700-800-900 type services available with the existing CALNET equipment. However, today only the 800/888 services are offered. Also included is Calling Card services. State agency personnel are able to dial into CALNET, enter an authorization number and place a calling card type call. Calls within California access CALNET using a Feature Group B access telephone number. Outside of California, CALNET has a complimentary carrier arrangement with MCI to carry the calls. MCI provides the billing information so that DGS/TD may rebill customers for the service. The calls are billed to the Calling Card account using the existing CALNET billing system.

3.1.1.2.Long Distance Access

Agency access to the CALNET long distance service is obtained through one of two methods. The service allows for either switched access (Feature Group D) or direct dedicated access. DGS/TD staff works closely with the agency to determine what method is best for their specific situation.

For low volume users it is generally recommended to presubscribe to CALNET long distance service and use Feature Group D trunks for accessing the long distance network. For Centrex/CentraNet and PBX users, it is more likely that a direct trunk connection into the long distance network will be recommended. The primary determining factor is generally the bottom line cost to the state for the service.

The costs for switched access are included in the usage rates billed by DGS/TD. The costs for direct dedicated access used to support consolidated services is also included in the usage rates billed by DGS/TD. The costs for direct access to dedicated agency equipment is typically billed separately by DGS/TD as a lump sum cost to that agency.

3.1.1.3.Local Consolidated Services

Local consolidated services consist of the telephone lines that are located in a common geographical area that can share a common service. These are typically Centrex and CentraNet services. Where more than one state agency has a need for telephone service in the same community, DGS/TD obtains the service, is the

customer of record for the service, pays for the common features and access, and coordinates the implementation of the services for the agencies. The service provider works directly with the agency to install the service and bills the agency directly for their lines and features. DGS/TD receives an administration fee from the service provider to help offset costs for the common equipment and features as well as staff time in administering the program.

In Sacramento, Los Angeles, San Francisco, and San Diego, DGS/TD provides local telephone service, referred to as CALDEX service, directly from the state owned CALNET equipment. The service is very similar to Centrex in terms of features and functionality. The main limiting factor is that CALDEX is provided only to those agencies that are directly linked to CALNET equipment through state owned facilities. DGS/TD bills the agencies for the lines and features on CALDEX.

CALDEX is technically capable of providing ISDN service, however, it is not being offered at this time. Agencies with an ISDN requirement are able to obtain the service with Centrex/CentraNet services.

3.1.1.4.Local Fiber Service

In Sacramento DGS/TD owns an extensive conduit structure with both copper wires and multiple pairs of fiber optic cable. The copper wires are used to connect the various state building to DGS/TD provided CALDEX service. There are 22 buildings connected to the conduit system in the downtown Sacramento area. In Los Angeles DGS/TD owns a conduit structure that connects the three main state buildings in the downtown area. In San Francisco DGS/TD owns a conduit structure that connects two state buildings in the downtown area. The cost of these structures are built into the rates for local consolidated CALDEX service.

3.1.1.5.Building Wiring Service

DGS/TD has a contract with GTE to provide building wiring support in all CALDEX locations (Sacramento, Los Angeles, San Francisco, and San Diego). Agencies requesting additions or changes to CALDEX service have the option to use the GTE contract to install the necessary building wiring, connect the telephone instrument and test the service. This contract has also been used for extensive rewiring of buildings to support agencies' growing demand for enhanced information technology infrastructure. Agencies are billed directly by GTE for the use of the contract.

Building wiring support is also available using the existing Pacific Bell Centrex agreement. Agencies may obtain wiring up to the instrument jack as a part of the normal Centrex installation fee. For CentraNet services the installation is governed by existing tariffs.

3.1.1.6.Information Services

DGS/TD provides three levels of information services. The first level is telephone number information to the public. Callers may ask for the telephone number of a specific state employee or state agency. If the information is in the state directory it is provided to the calling party. The second level is general state information. Callers query DGS/TD operators for specific state agency telephone numbers based on a general description of the services they are seeking. DGS/TD operators are required to fully understand the state services provided and try to match the service with the caller's inquiry. There is no charge to the calling party for these services. Costs are included in DGS/TD overhead and recovered as a part of the billing for other services.

The last level of information service is the published state telephone directory. Annually, DGS/TD publishes a directory with a list of the agencies and departments with key staff names and telephone numbers. The directory also includes a listing of key state employees by alphabetical listing with their associated department and telephone number. The telephone number does not have to be a CALDEX or CALNET number. DGS/TD is in the process of evaluating the addition of Internet addresses as a part of the directory listing. The charge for the directory is determined by actual costs and billed to agencies based on the number of directories they order.

3.1.1.7.Voice Mail Services

DGS/TD provides voice mail service through either contract services from the local serving utility or through equipment owned by DGS/TD.

In Sacramento DGS/TD owns an Octel Voice mail system that serves some of the employees on the Sacramento CALDEX service. Throughout the rest of the state voice mail service is directly provided to users by the local serving utility (Pacific Bell or GTE) via master agreements with DGS/TD. When services are directly provided the utilities also directly bill the user. With this arrangement, DGS/TD receives an administrative fee from the billing utility based on the number of voice mail boxes in service. This fee is for DGS/TD's role in administering the contract.

Some agencies, such as DMV, CalTrans, CHP, and the Department of Insurance have their own voice mail systems.

3.1.1.8. Local Services

The local dial tone service in non consolidated locations is provided by the local utility for that franchised area. There are no exclusive agreements or contracts for this service. Acquisition of this service is currently delegated by DGS/TD to the agencies. However, DGS/TD conducts periodic reviews of local service in terms of potential consolidation candidates. When there is a large concentration of local government telephone service in a community, DGS/TD conducts a consolidation study. Factors considered in the study include the present costs for service, local and long distance, and the costs if a consolidated service was installed in the location. Once the decision is made to implement a consolidated service, state agencies are then required to convert their existing service to the new service arrangement. This service is then made available to local governments in the area.

3.1.1.9. Data Services

DGS/TD offers three basic data services; Dedicated, Switched, and Frame Relay. Dedicated data services are essentially point-to-point bandwidth for an agency. This is provided by assigning bandwidth over the existing CALNET transport facilities or by allowing an agency to use the existing agreement with MCI for these services. The first choice is to use the existing CALNET infrastructure. Agencies using the CALNET infrastructure are billed for the services by DGS/TD. Agencies using the MCI contract are billed by MCI directly. DGS/TD is provided an administrative fee from MCI for all contract use.

Switched high speed (56KBPS and above) are provided through the CALNET transport facilities as well as through the MCI contract. CALNET offers the capability for users to dial into the network through ISDN service and obtain switched 56KBPS services for either data or video communications.

Frame Relay services are provided using a combination of CALNET transport and an agreement with Pacific Bell. Pacific Bell provides the access and frame switching within the LATAs. The CALNET transport is used to directly connect each of the Pacific Bell Frame Relay switches and provide interLATA transport of the frames.

3.1.1.10. Teleconferencing - Audio and Video

Audio teleconferencing is provided through state owned CALNET equipment, Pacific Bell and GTE consolidated local services, and through non-exclusive agreements with AT&T and MCI. Basic audio conferencing on CALDEX and the Centrex/CentraNet services are provided as a standard feature. There are three way conferencing, six port conferencing, and CALDEX offers a 30 port meet-me conference bridge and preset conferencing up to 25 predesignated conferees. The CALDEX services are billed by DGS/TD directly to the agency for services used. Centrex/CentraNet features are billed by the appropriate contractor.

AT&T and MCI offer operator assisted teleconferencing for those state users that find that standard conferencing does not meet their specific needs.

3.1.1.11. Payphone Services

DGS/TD provides and manages Pay Telephone concession services through contracts with MCI and GTE. The contracts have provisions for both basic and enhanced services and is available to state and local government users. Users may self manage their payphone environment or elect to have the management function performed by DGS/DT. Management reports on phone locations, usage, and revenues are required of the contractor on a monthly basis. There are presently over 8,000 payphones covered under the contract. A significant portion of the payphones are in correctional facilities.

3.1.2. Overview of DGS/TD Billed Services

This section presents a descriptive overview of CALNET's consolidated services and system capabilities provided directly by DGS/TD. These are services provided using the equipment and systems acquired through the competitive CALNET bid. CALNET is a new generation, digital, integrated State Telecommunications Network supported by a functional, comprehensive Network Management and Control System. CALNET is a "state of the art" network capable of providing the feature functionality specified with Integrated Services Digital Network (ISDN), system wide Custom Local Area Signaling Services (CLASS), and Common Channel Signaling No. 7 (CCS7).

The services provided under the CALNET contract are essentially private network type services allowing for direct state oversight and control. During the recent California earthquakes the public telecommunication networks were congested and restricted calling into the affected areas. At

the same time, CALNET users enjoyed unrestricted access to the disaster communities. This allowed state agencies to coordinate disaster relief, evaluate affected sites for occupancy, and relocate state employees to continue to provide service to the local community.

The Local Exchange Carriers (LEC) tariffs which provide for private networks, private exchange services, and private line service are used to provide access to the network for various state agencies. Some LEC provided services that are not tariffed are obtained by DGS/TD on special contracts. DGS/TD is the customer of record for all utility orders used in the provision of services for CALNET.

Customer premises station equipment is not included as part of DGS/TD consolidated services. However, some equipment is provided at user locations to meet the service requirements, such as SMDR sensors and transmitters, channel banks, remote line loop back devices, transmission line responders, and status monitoring devices.

DGS/TD owns the equipment that establishes the point of presence at which all telecommunications service providers interface to the state equipment to provide integrated services. The point of presence is referred to as the State Carrier Interface Point (SCIP). There are Major, Minor, and Hybrid SCIPs. The major SCIPs house the states class 4/5 switches along with the transport equipment. The minor SCIPs house only the transport equipment to consolidate services for the LATA. There is only one Hybrid SCIP, in San Diego. This site houses a remote class 5 switch that is connected to the Los Angeles class 4/5 switch.

In both Los Angeles and San Francisco the state is required to move the major SCIPs to other sites because the existing buildings are scheduled to be razed. Based on current information both buildings must be vacated by FY 1999/2000. Refer to Table 3.1.2 for specific locations of the SCIPs. DGS/TD maintains direct oversight and control of the SCIP facilities.

CALNET provides local telephone services referred to as CALDEX. These services are provided directly from three state owned NORTEL Meridian SuperNode class 4/5 switches (MSN-100 switches) located in specified SCIP locations. These switches are running MSL06 software load with NSS feature support. This local telephone service is provided through state owned interconnecting facilities to continuous property premises or on campus sites adjacent to the SCIPs. CALNET also provides local telephone service through three Remote Switching Modules hosted by the Major SCIPs.

CALNET provides integrated (voice, data, public safety, and video), mixed mode (switched, time reserved, and private line) transport service. The SCIPs ensure the proper routing of traffic while the transport gateways assure optimum utilization of transport facilities.

INTEGRATED INFORMATION NETWORK

RFI TD-97-01

The state owns a centralized, highly automated Network Management Center. This element of the Network Management System employs remote monitor and control equipment, distributed intelligence, and redundant backup devices at locations designed to prudently minimize the need for operating personnel and special skill requirements.

CALNET is a state premise hubbed, multi-node, mixed-mode, limited access, cost recovery oriented, integrated telecommunications network.

- State premises hubbed, because the switching nodes, the gateways to the transport network and interfaces to the local access facilities, are located in and on state property.
- Multi-node, because concentration hubs are installed to interface with the LEC and IXC provided facilities to form the DGS/TD SCIPs.
- Mixed mode, because the internode transport network is capable of simultaneously carrying mixed traffic from switched facilities and dedicated facilities.
- Limited access, because access to and use of this state private network is limited to the business requirements of state, county, local and non-profit tax supported agencies.
- Cost recovery oriented, because DGS/TD as operator and manager of CALNET charges to agencies, at cost based rates, for their usage on either a message sensitive or a fixed fee basis, depending on the facilities or services being utilized.
- Integrated, because to maximize the use of cost effective facilities, i.e., T3 (the equivalent of 28 T1s or 672 equivalent voice grades), DGS/TD consolidates a wide variety of voice, data, and video communications onto common facilities.

SCIP Location	Address
Sacramento Major SCIP	1115 P Street
San Francisco Major SCIP	525 Golden Gate Avenue *
Los Angeles Major SCIP	107 S. Broadway *
Stockton Minor SCIP	31 E. Channel Street
Redding Minor SCIP	2135 Akard Avenue
Fresno Minor SCIP	2550 Mariposa Avenue
Bakersfield Minor SCIP	3801 Pierce Road
San Diego Hybrid SCIP	1350 Front Street

* SCIP sites scheduled for demolition. Based on current information the state must vacate these locations by FY 1999/2000.

SCIP Locations

Table 3.1.2

3.1.2.1.Existing Network Components and Interfaces

To simplify discussion and understanding of CALNET, it can be considered be comprised of four major components. See Figures 3.1.2.1a , 3.1.2.1b and 3.1.2.1c for a diagram of how these components interrelate in each of our SCIP types.

- Transport Network
- Switching Network
- Off-Network Communication/Facilities
- Network Access

3.1.2.1.1.TRANSPORT NETWORK

In addition to the backbone carrier facilities, the transport network includes the gateways located in the SCIPs to provide an interface to the inter-exchange carrier and state facilities at the network switching nodes. The state owned gateways allow the direct insertion of various speed dedicated private line data circuits onto the transport network along with DS-1 multiplexed circuits. This technique improves the bandwidth efficiency when mixed mode traffic is present on the inter-node facilities. The gateways also provide the means to dynamically reroute

various voice, data, and video bandwidths to alternate facilities for limiting the effects of outages and other transmission failures.

3.1.2.1.2.NETWORK SWITCHING

Each major SCIP functions as a tandem toll center interface to the local exchange carrier and as an end office for its served subscribers. Traffic from the switch and attached private exchanges or dedicated access is organized and assembled on DS-1 circuits by the digital cross connect to be routed to the LEC, IXC wide area service, the data channel banks (with drops to the gateway), or the switch.

The state switching node routes local exchange area switched traffic to the LEC and only inter-exchange traffic to the transport network or IXC wide area service. The node is capable of routing base band dedicated data circuits directly to the transport network via the gateways.

All equipment at each of the SCIPs, including the transport gateway and certain agency premises equipment, is monitored by, controlled by, and transmits alarms and administrative data to the Network Management Center.

The Public Safety Switching System is incorporated into the CALNET network. The Major SCIPs located in Sacramento and Los Angeles perform class 4 switch functions for the Public Safety Communications Networks. Dedicated class 4 trunks are interconnected through the State Public Safety Microwave to PBXs in public safety organizations throughout the state. Several statewide Public Safety VHF Radio communications networks are supported by the CALNET class 4 functionality.

3.1.2.1.3.OFF-NET COMMUNICATIONS/FACILITIES

Off-net terminating traffic utilize Feature Group B, or D services as well as direct termination through the CALDEX DOD trunks dependent upon location and type of call. Off-net inter-exchange and InterState calling utilizes IXC wide area services.

3.1.2.1.4.NETWORK ACCESS

LEC access lines are used to connect with CALNET class 4/5 switched and IXC wide area service. LEC private line service is used to connect with agency private and remote exchanges. Access is also provided via LEC private line

and State owned channel banks to large data users and analog private exchange locations. CALNET uses Switched Access Service and acts as carrier of choice for certain state, county, local, and non-profit tax-supported agency locations. LEC private line services are used to provide dedicated data and video circuit access to the network. Continuous property locations near SCIPs are served directly from the class 4/5 switch. The Sacramento capitol transport complex is used for providing bandwidth capacity between connected state facilities and for access to CALNET (see Figure 3.1.2.1.4).

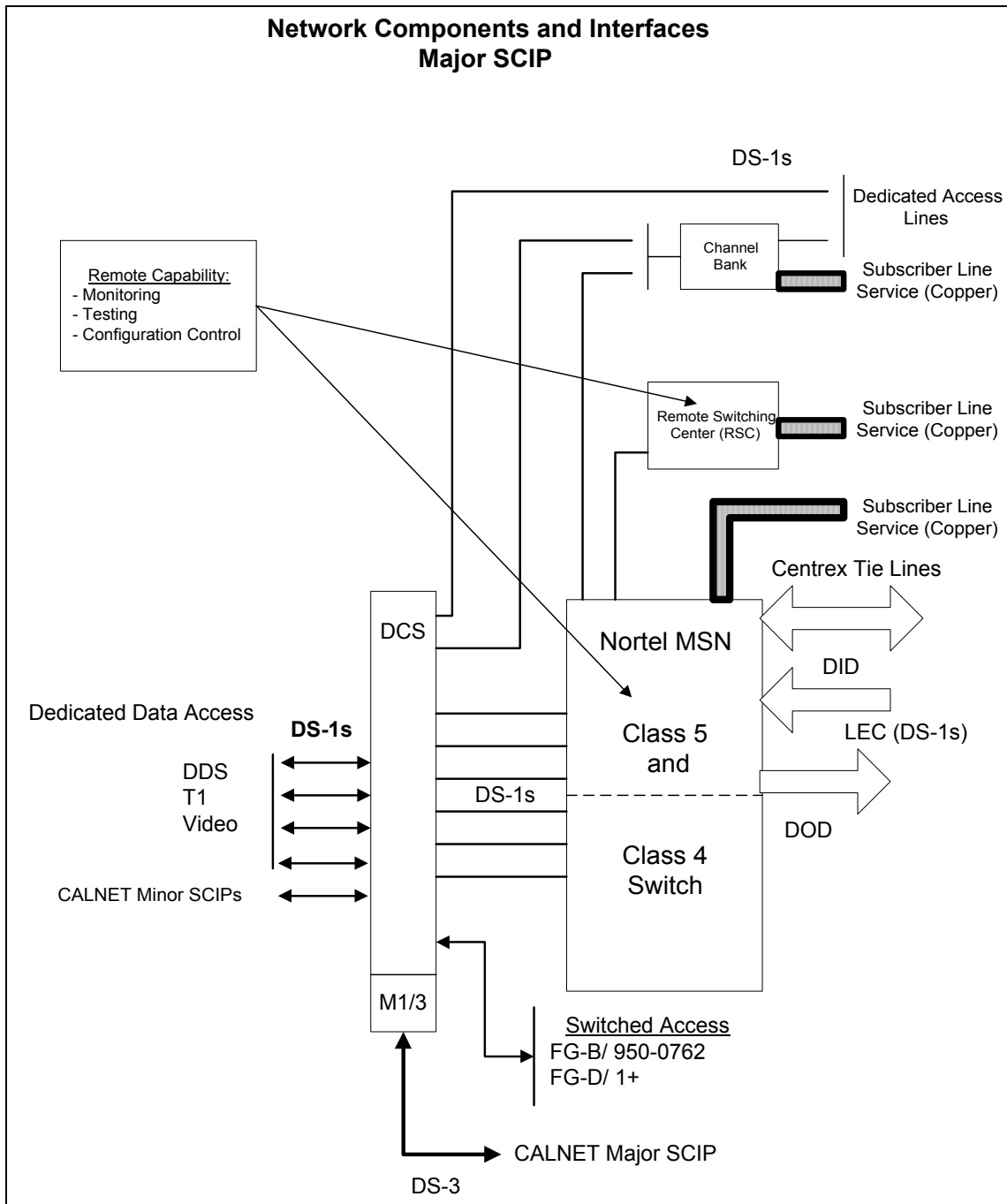


Figure 3.1.2.1a

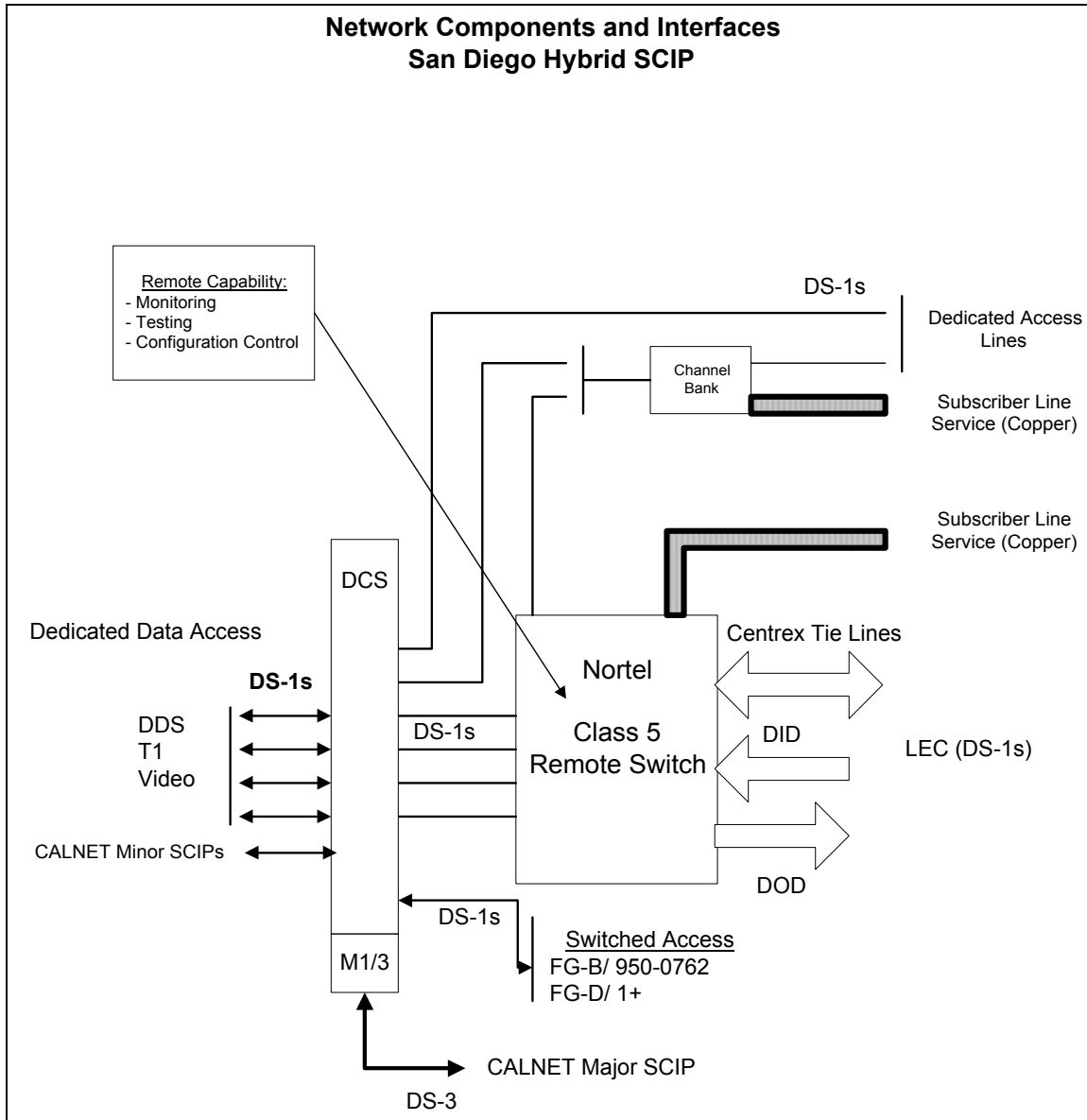


Figure 3.1.2.1b

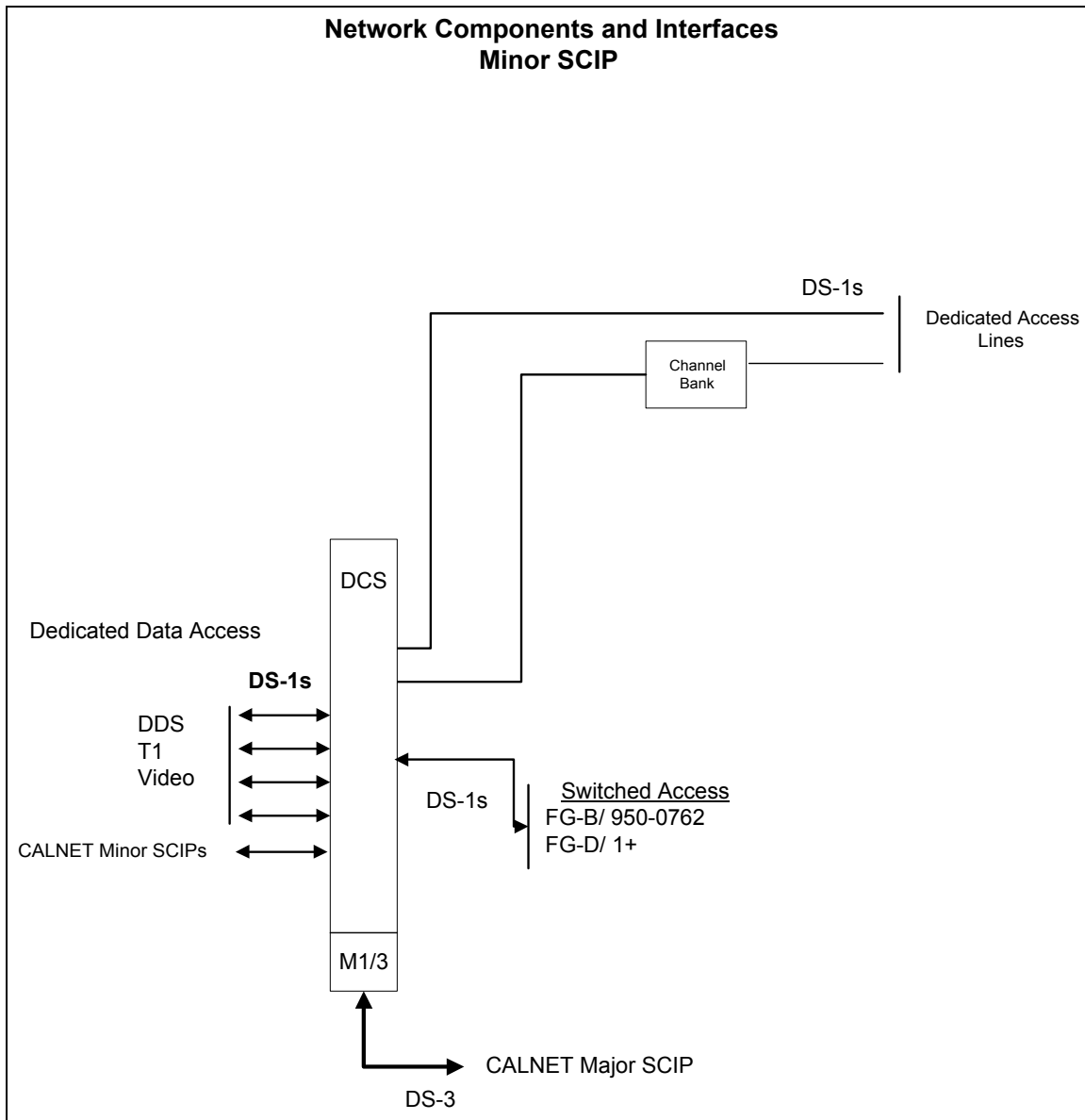


Figure 3.1.2.1c

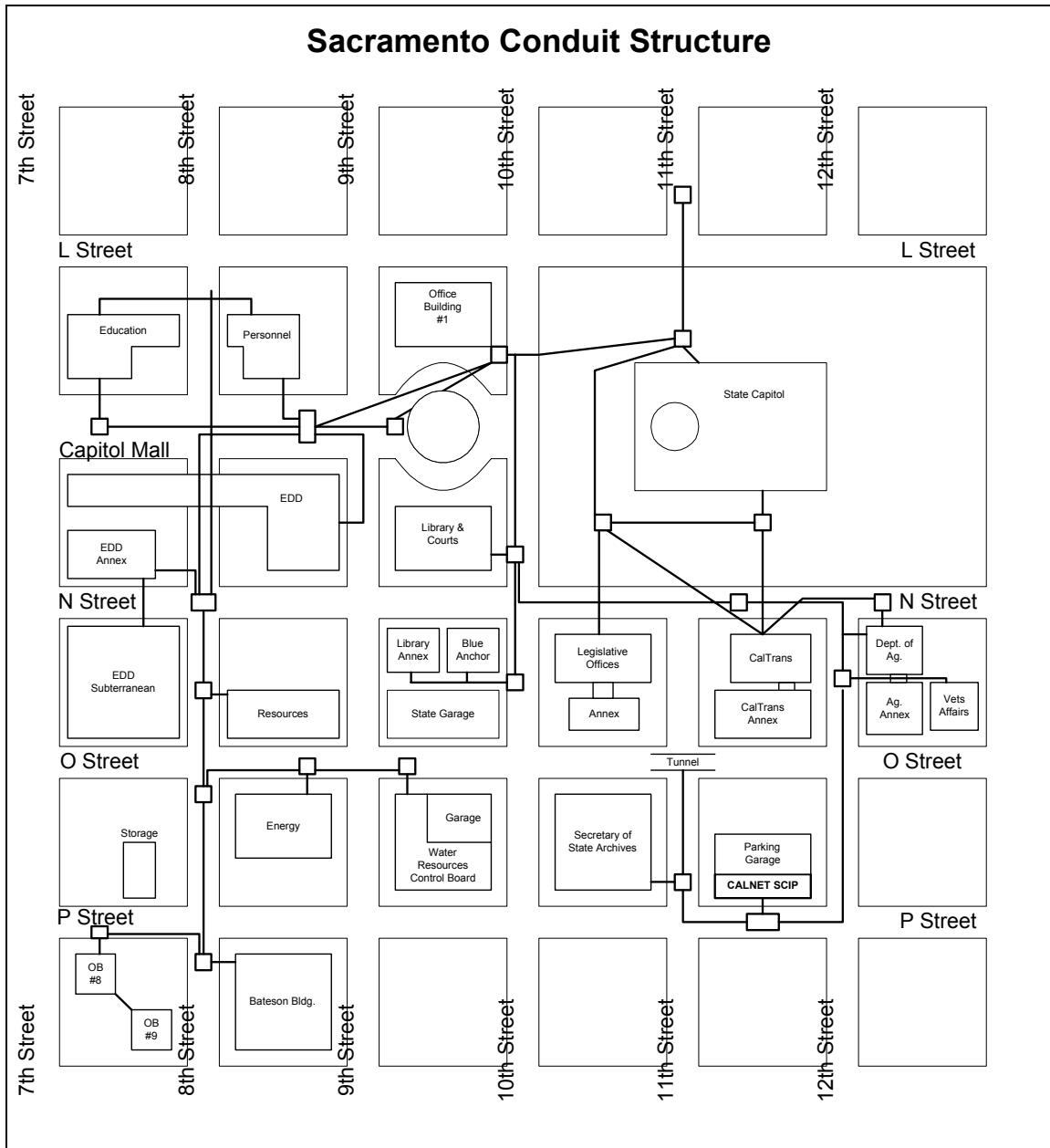


Figure 3.1.2.1.4

3.1.3. Overview of State Data Networks

The State maintains a number of independent data networks specific to the needs of each data center. A recent survey of the major data centers identified that most of the State's applications fell into one of the following type:

- Messaging
- Transaction Processing
- File Transfer
- File Sharing
- Host Based Processing from Remote Terminals
- Client Server Applications
- Web Site Access
- Internet Access

Almost all agencies surveyed have leased point-to-point circuits between major nodes and several hundred minor nodes around each major node. No obvious pattern is discernible, other than the presence of high speed links between major cities. The following tables and figures provide interLATA system topology and information for ten of the major data centers, Health and Welfare Agency Data Center, Teale Data Center, Department of Justice, Department of Insurance, and California Highway Patrol. The figures are not meant to imply a single point of concentration in each city for each data center. It is possible that the data centers may have multiple sites or concentration points in the various cities. These ten data centers are not all inclusive of the total state data services, however they do represent the larger data service users and those of which information is currently available. DGS/TD estimates that the value of just the interLATA portion of the transport costs for the ten networks is in excess of \$1 million a year. Actual value of all of the transport services may be much higher. Health and Welfare Agency Data Center alone is paying \$5 million a year for total transport costs.

The state is presently migrating services to Frame Relay. It is estimated that the State currently spends at least \$15 million/year for data services that could be converted to FrameRelay service. By consolidating individual agency data networks onto one frame relay network service, the State anticipates a significant savings.

As a more complete inventory becomes available, it is the intent of DGS/TD to migrate these systems and all other data centers to either the CALNET backbone or the existing interLATA contract where appropriate.

HWDC Major Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
1544	Sacramento	Los Angeles
1544	Sacramento	Los Angeles
1544	Sacramento	Los Angeles
1544	Sacramento	Los Angeles
1544	Sacramento	San Diego
56	Sacramento	San Diego
56	Sacramento	San Diego
1544	Sacramento	San Jose
1544	Sacramento	San Jose
1544	Sacramento	Santa Ana
1544	Sacramento	Santa Ana
1544	Sacramento	Santa Ana
1544	Sacramento	Stockton
1544	San Jose	Santa Ana
1544	Santa Ana	Los Angeles
1544	Stockton	San Jose

Table 3.1.3a

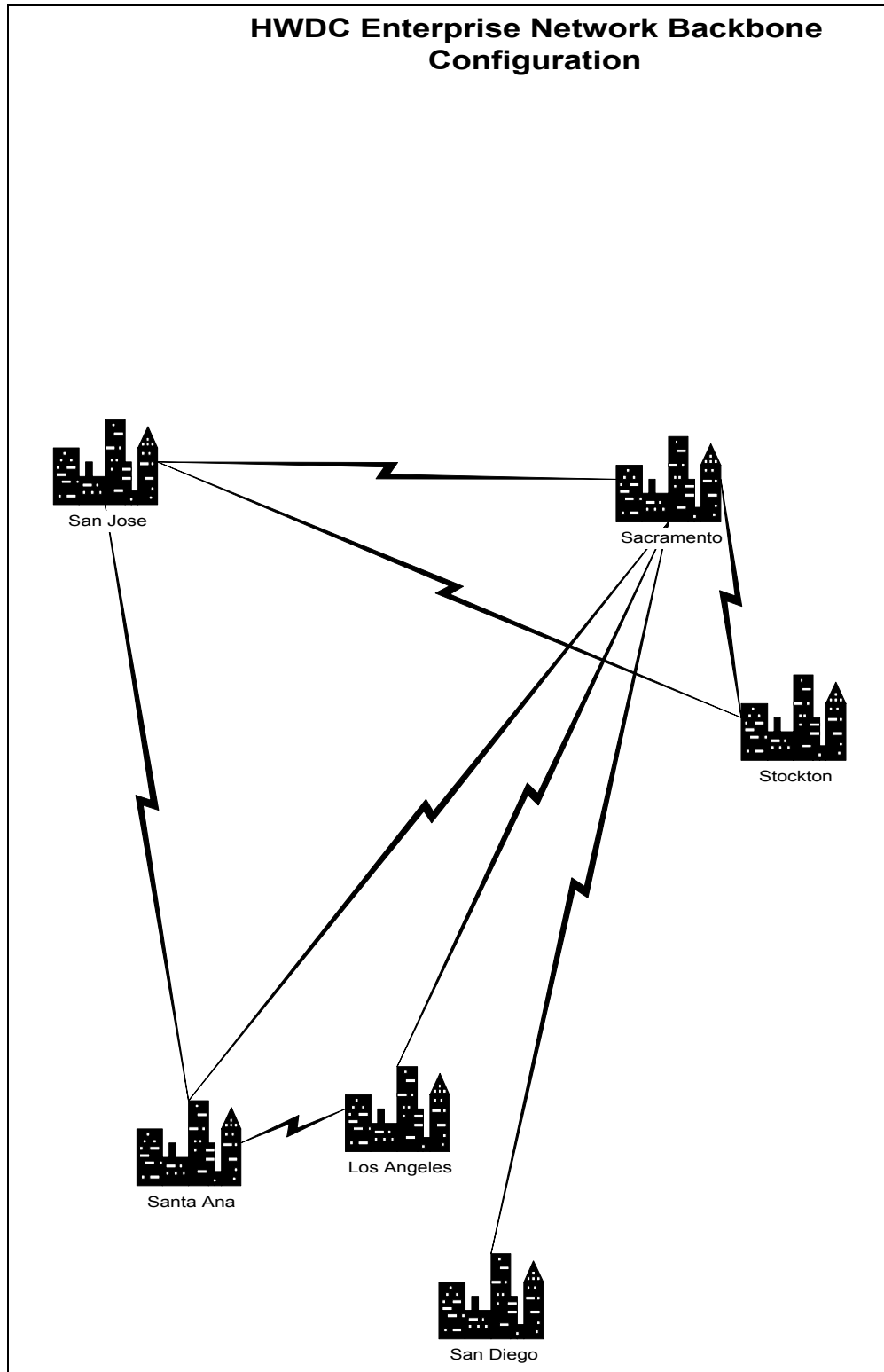


Figure 3.1.3a

Teale SDS Network Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
56	Bakersfield	Fresno
56	Crescent City	San Francisco
56	Crescent City	San Francisco
56	Crescent City	San Francisco
1544	Fresno	Bakersfield
1544	Fresno	San Diego
1544	Fresno	Stockton
56	Fresno	Stockton
1544	Fresno	Stockton
1544	Los Angeles	Bakersfield
1544	Los Angeles	Fresno
1544	Los Angeles	Sacramento
1544	Los Angeles	San Diego
1544	Los Angeles	San Diego
56	Los Angeles	Santa Barbara
1544	Sacramento	Los Angeles
1544	Sacramento	San Francisco
1544	Sacramento	San Francisco
1544	Sacramento	Stockton
1544	Sacramento	Stockton
1544	San Francisco	Los Angeles
1544	San Francisco	Los Angeles
1544	San Francisco	Sacramento
1544	San Francisco	Sacramento
1544	San Francisco	Sacramento
56	San Luis Obispo	Fresno
56	San Luis Obispo	Fresno
56	San Luis Obispo	Fresno
56	San Luis Obispo	Salinas
56	Soledad	San Francisco
56	Soledad	San Francisco
56	Soledad	San Francisco
1544	Stockton	Sacramento
56	Stockton	Sacramento
56	Susanville	Sacramento
56	Susanville	Sacramento
56	Tehachapi	Fresno
56	Tehachapi	Fresno
56	Tehachapi	Fresno
56	Tehachapi	Fresno

Table 3.1.3b

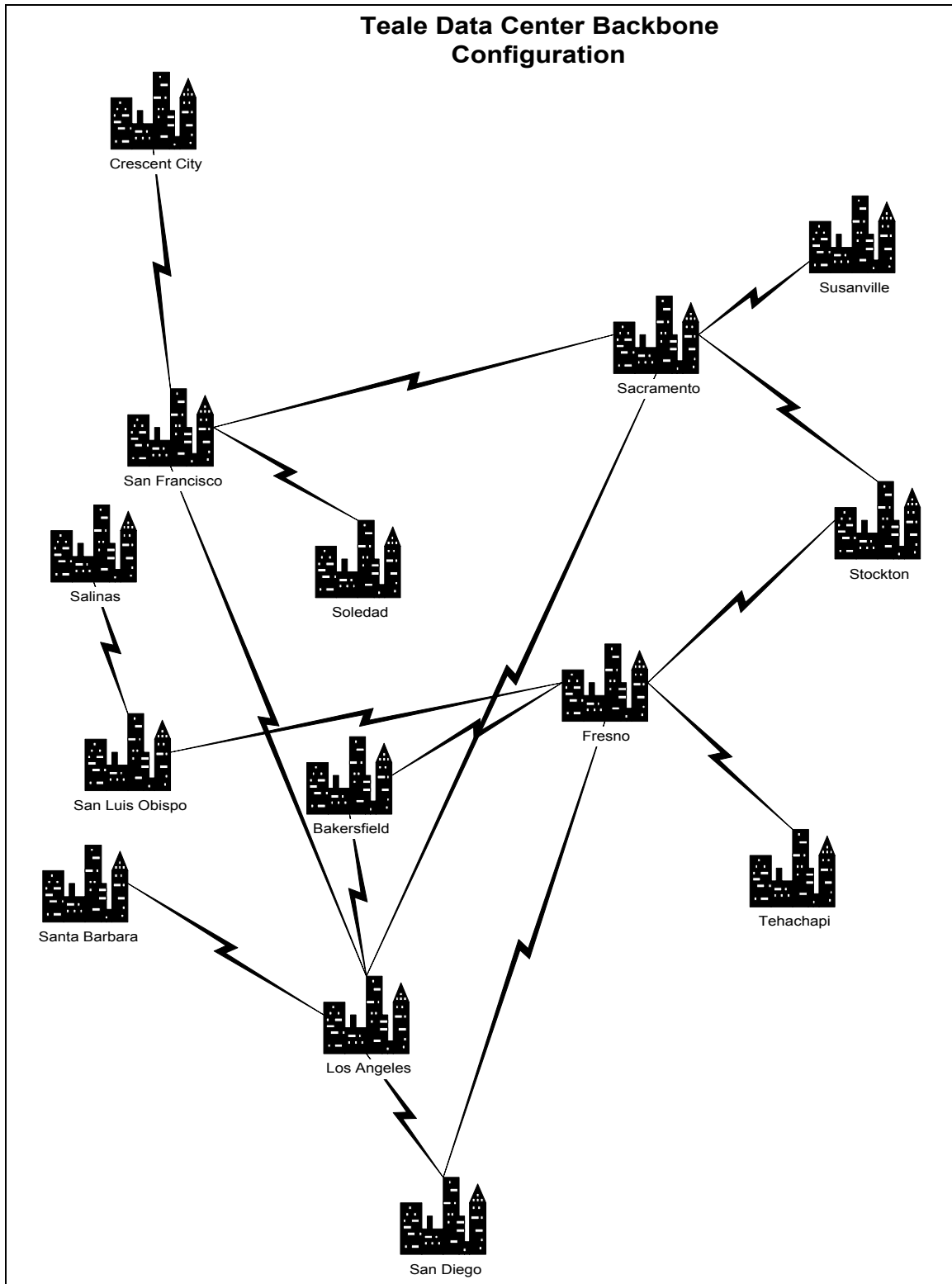


Figure 3.1.3b

Department of Justice Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
320	Auburn	Stockton
256	Bakersfield	Fresno
56	Bridgeport	San Bernardino
56	Colusa	Woodland
1544	Fresno	Sacramento
1544	Fresno	San Jose
256	Lakeport	San Francisco
256	Los Angeles	Bakersfield
1544	Los Angeles	Sacramento
1544	Los Angeles	San Bernardino
256	Los Angeles	Ventura
256	Mariposa	Stockton
256	Martinez	Stockton
56	Marysville	Oroville
56	Marysville	Woodland
256	Merced	San Jose
256	Modesto	Fresno
256	Napa	Oakland
256	Napa	Santa Rosa
320	National City	San Diego
1544	Oakland	Sacramento
1544	Oakland	San Francisco
256	Oroville	Woodland
256	Redding	Willows
256	Riverside	San Diego
1544	Sacramento	Oroville
1544	Sacramento	Redding
1544	Salinas	Sacramento
256	Salinas	San Luis Obispo
56	San Andreas	Stockton
1544	San Bernardino	Sacramento
256	San Bernardino	Visalia
1544	San Diego	Sacramento
1544	San Diego	Sacramento
1544	San Francisco	Sacramento
256	San Luis Obispo	Santa Barbara
1544	Santa Ana	Sacramento
1544	Santa Ana	San Diego
1544	Santa Barbara	Salinas
256	Santa Barbara	Ventura
256	Santa Cruz	San Francisco
1544	Santa Rosa	Sacramento
256	Sonora	Sacramento
256	Sonora	Stockton
1544	Stockton	Sacramento
256	Woodland	Sacramento

Table 3.1.3c

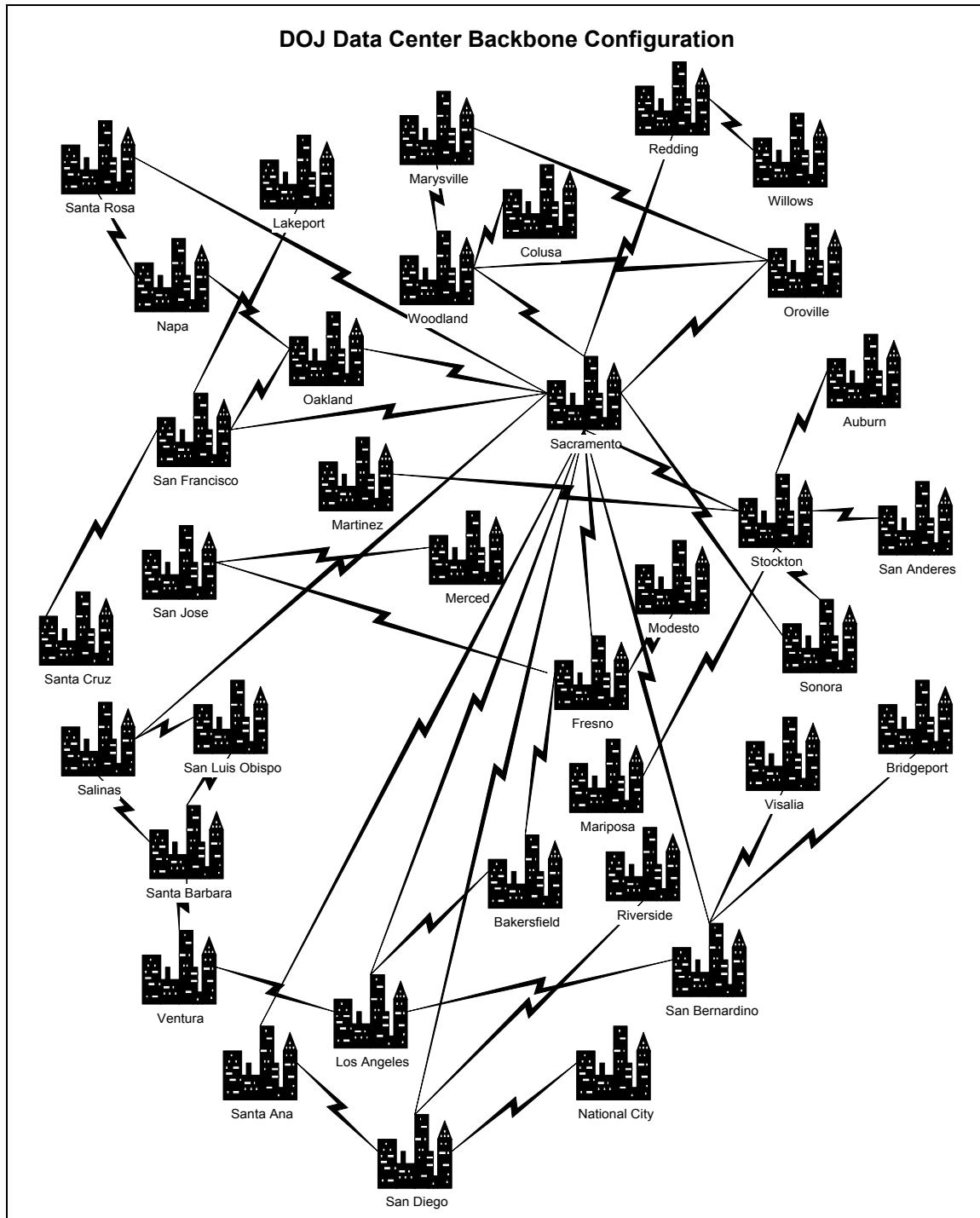


Figure 3.1.3c

Department of Insurance Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
1544	Los Angeles	City of Commerce
56	Los Angeles	Garden Grove
1544	Los Angeles	San Francisco
56	Sacramento	Fresno
56	Sacramento	Los Angeles
1544	Sacramento	Los Angeles
56	Sacramento	Rancho Cucamonga
56	Sacramento	San Diego
56	Sacramento	San Francisco
1544	Sacramento	San Francisco
1544	Sacramento	San Francisco

Table 3.1.3d

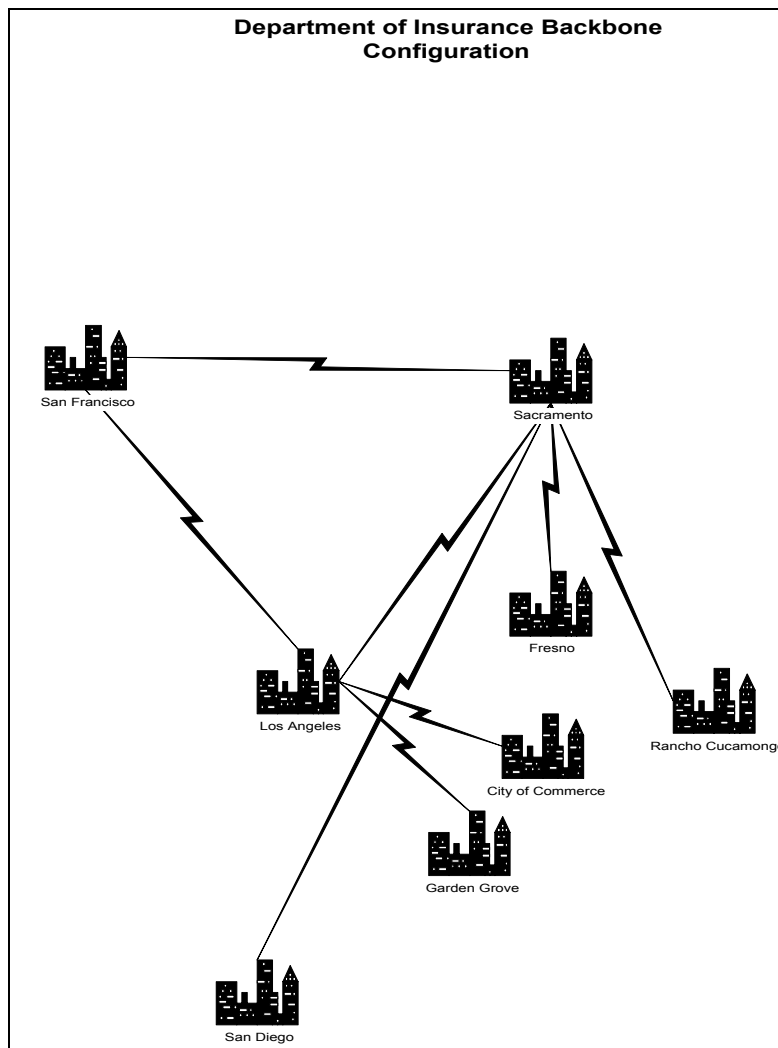


Figure 3.1.3d

CALTRANS DOTNET Data Circuits

(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
56	Eureka	Redding
1544	Redding	Marysville
1544	Marysville	Sacramento
1544	Eureka	Oakland
128	Eureka	Sacramento
1544	Oakland	Sacramento
1544	Oakland	San Luis Obispo
1544	San Luis Obispo	Fresno
1544	Sacramento	Stockton
1544	Stockton	Fresno
1544	Sacramento	Los Angeles
1544	Los Angeles	San Diego
1544	Los Angeles	Santa Ana
1544	San Diego	Sacramento
1544	San Diego	San Bernardino
1544	San Bernardino	Santa Ana
56	San Bernardino	Bishop

Table 3.1.3e

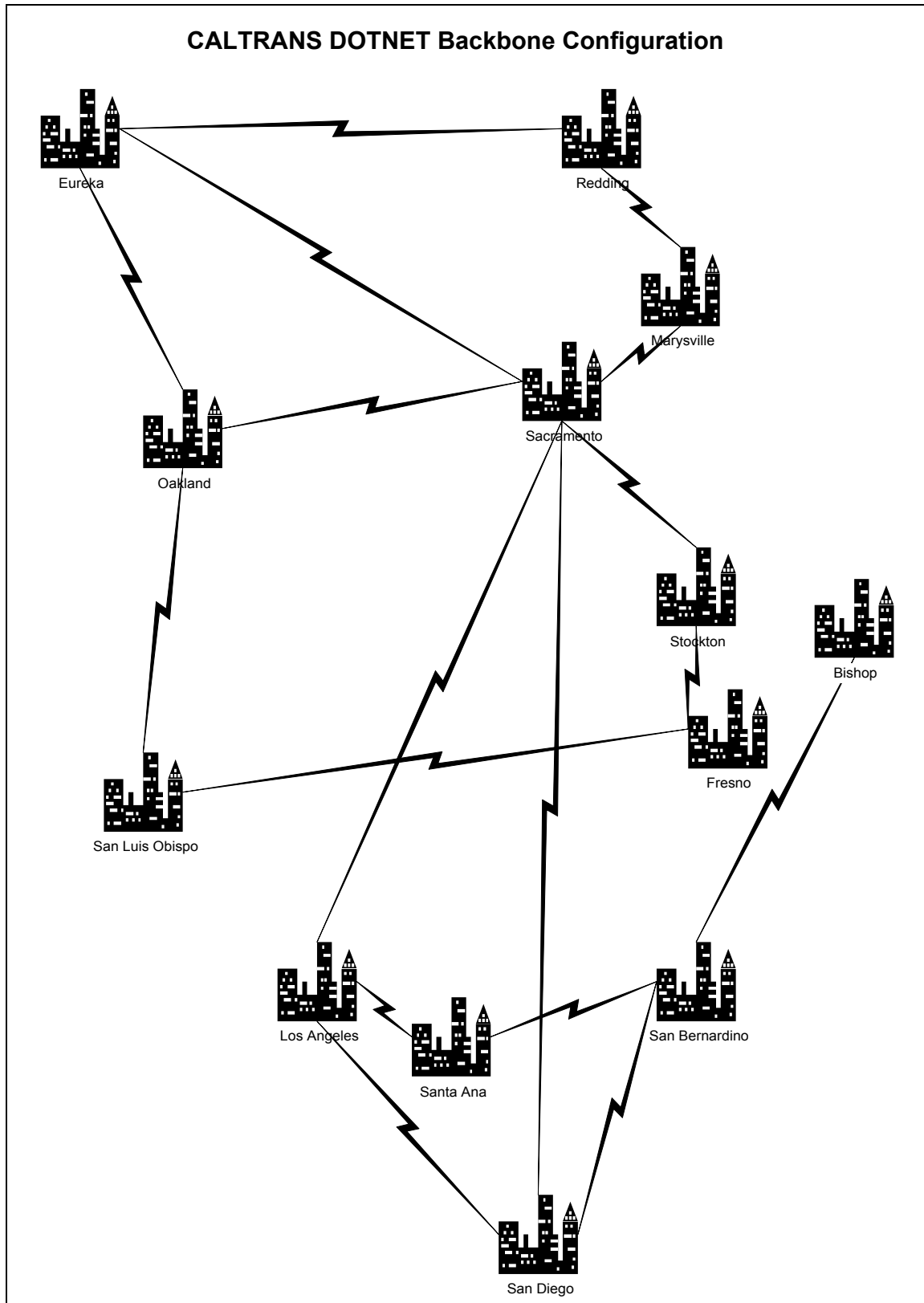


Figure 3.1.3.e

Air Resources Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
1544	Sacramento	El Monte
1544	Sacramento	El Monte

Table 3.1.3f

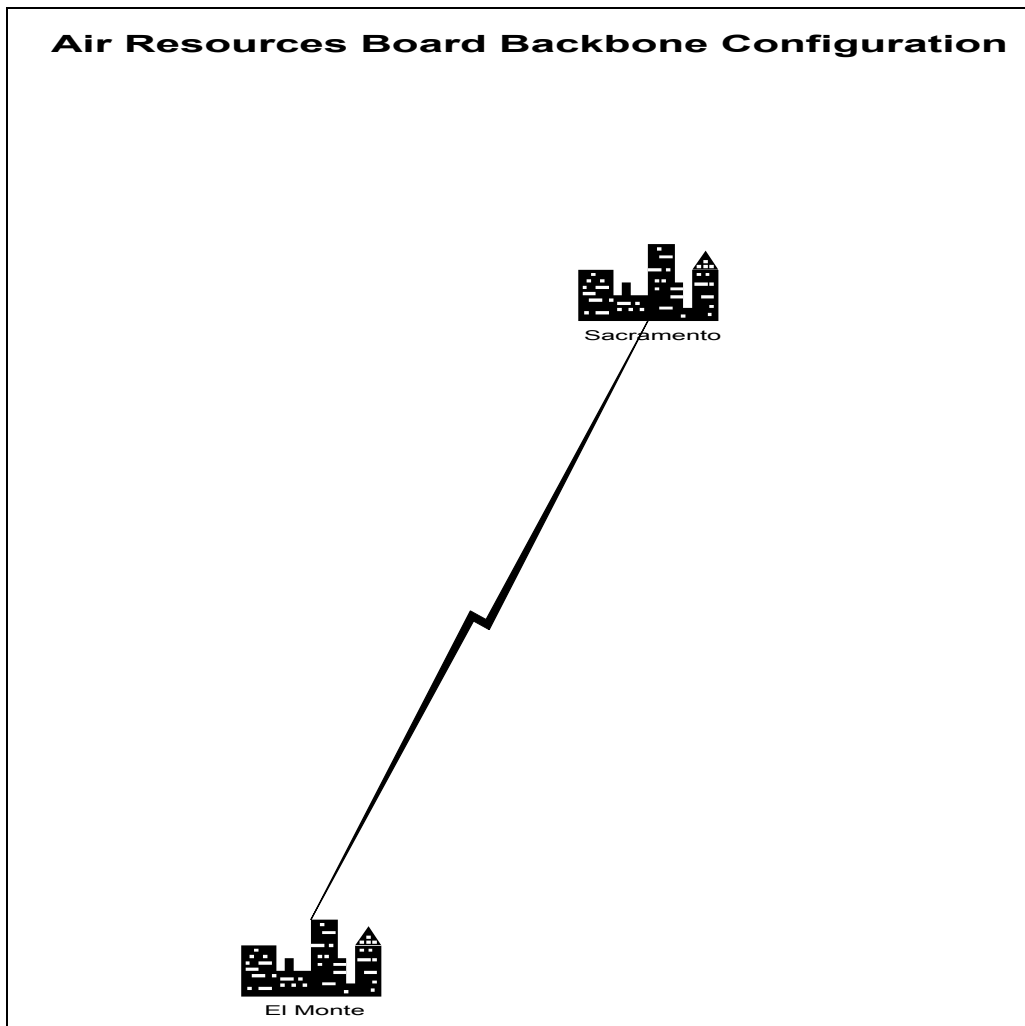


Figure 3.1.3.f

Housing and Community Development Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
56	Sacramento	San Jose
56	Sacramento	Fresno
56	Sacramento	Winnetka
56	Sacramento	Riverside
56	Sacramento	Redding
56	Sacramento	La Mesa
56	Sacramento	Santa Ana
56	Sacramento	San Luis Obispo

Table 3.1.3g

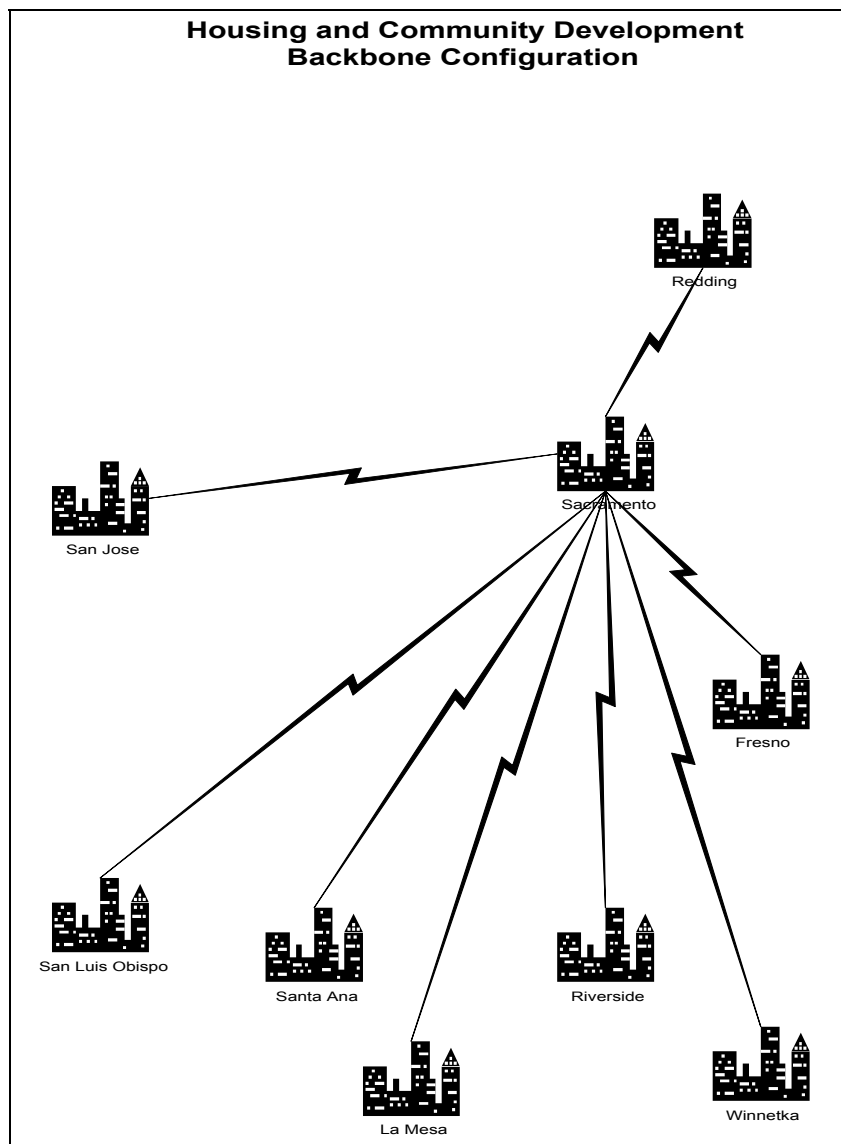


Figure 3.1.3g

Board of Equalization Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
56	Sacramento	Redding
56	Sacramento	San Francisco
56	Sacramento	Oakland
56	Sacramento	Salinas
56	Sacramento	Torrance
56	Sacramento	Van Nuys
56	Sacramento	Santa Ana
56	Sacramento	Orange
56	Sacramento	Norwalk
56	Sacramento	Culver City
56	Sacramento	Bakersfield
56	Sacramento	City of Industry
56	Sacramento	San Diego
56	Sacramento	Riverside
56	Sacramento	Rancho Mirage
56	Sacramento	Fresno
56	Sacramento	Stockton

Table 3.1.3h

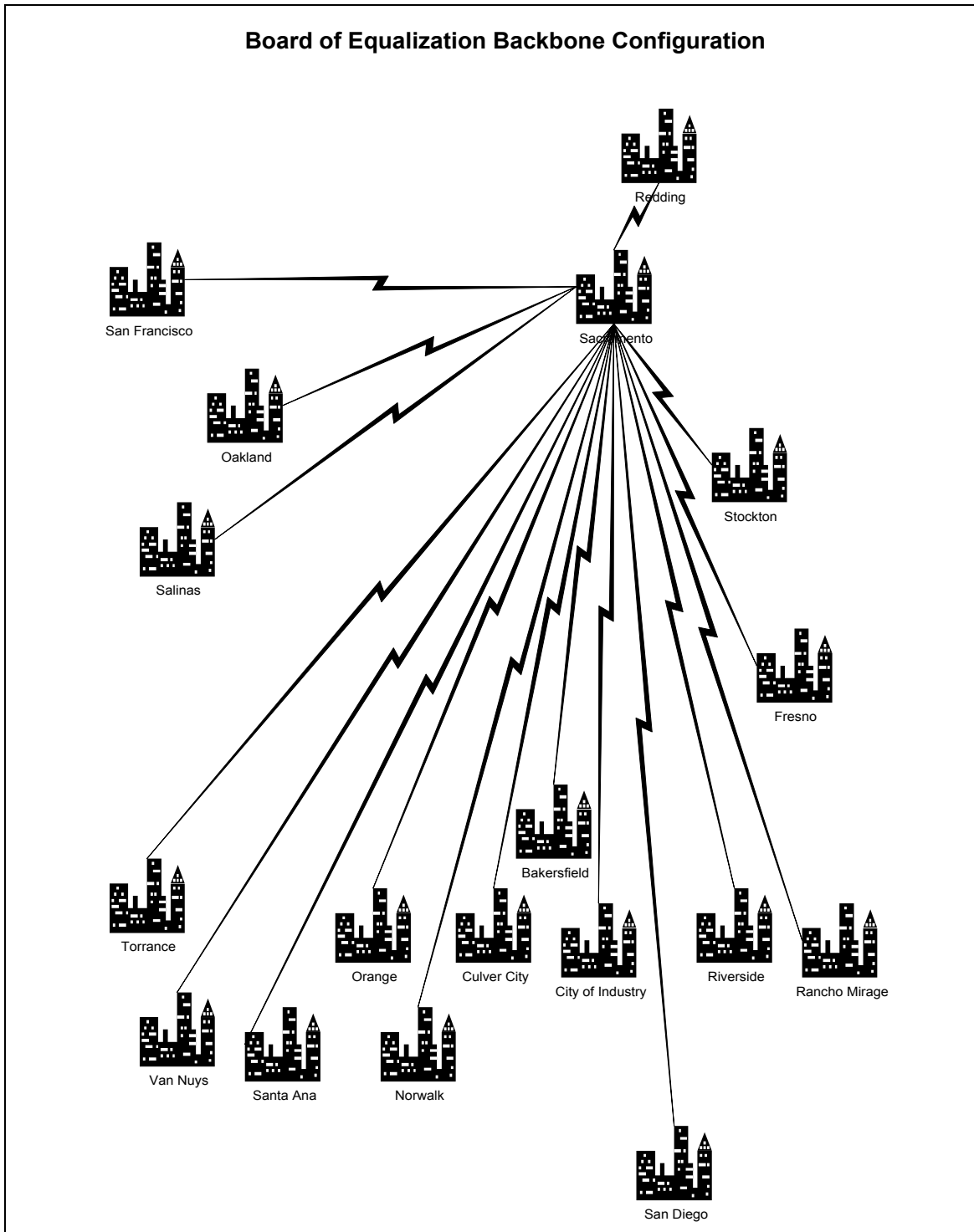


Figure 3.1.3h

Department of Forestry and Fire Protection Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
348	Sacramento	Redding
384	Sacramento	Santa Rosa
384	Sacramento	Riverside
384	Sacramento	Fresno
56	Fresno	San Luis Obispo
56	Fresno	King City
56	Riverside	San Diego

Table 3.1.3i

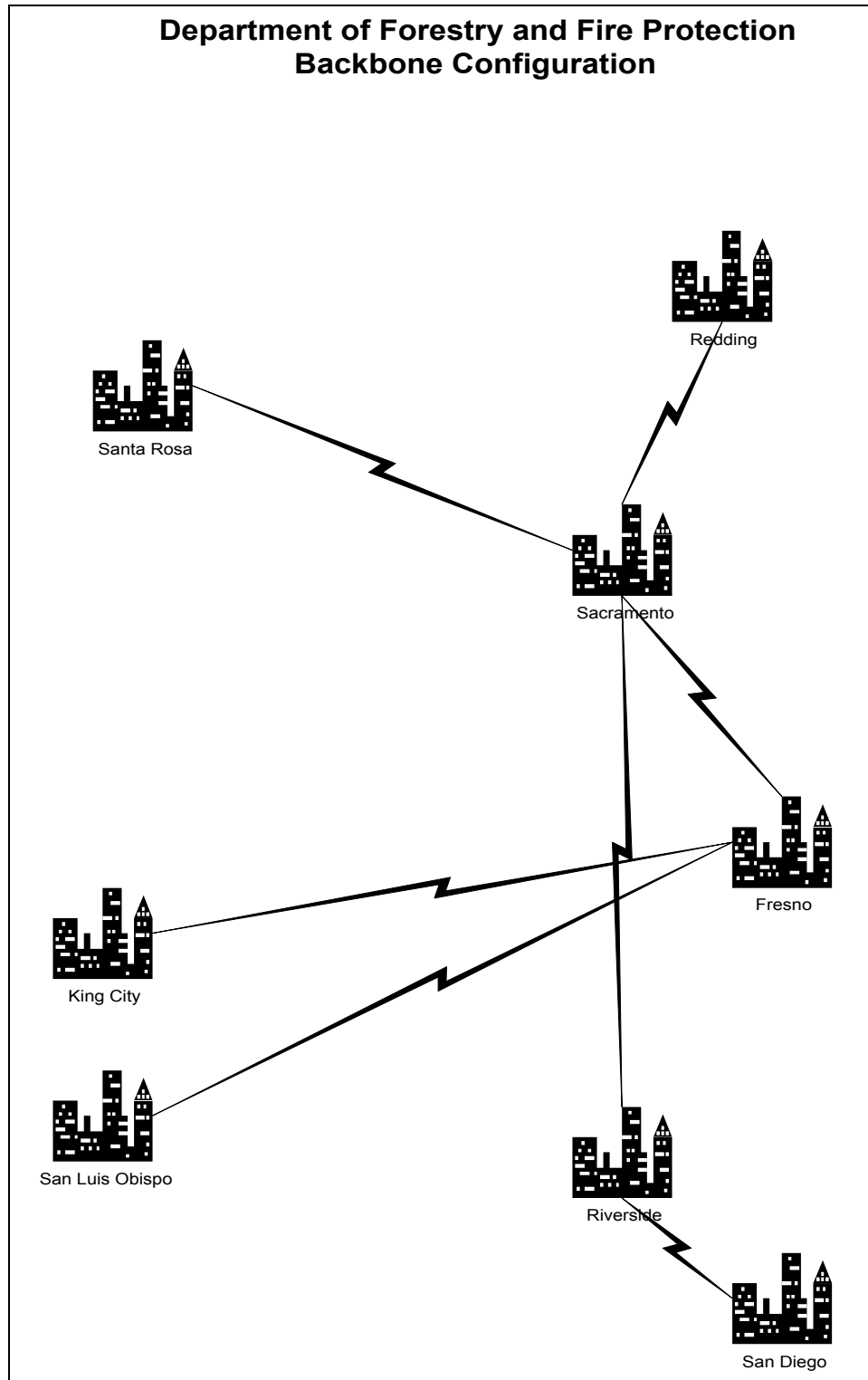


Figure 3.1.3i

CHP Message Switching Data Circuits
(InterLATA - 56KBPS and Above)

Speed (KBPS)	Location A	Location Z
56	Fresno	Atwater
56	Fresno	Atwater
56	Fresno	Atwater
56	Fresno	Bakersfield
56	Fresno	Bakersfield
56	Los Angeles	Sacramento
56	Los Angeles	San Diego
56	Los Angeles	San Luis Obispo
56	Los Angeles	Santa Ana
56	Los Angeles	Ventura
56	Sacramento	Burlingame
56	Sacramento	Fresno
64	Sacramento	Fresno
64	Sacramento	Los Angeles
56	Sacramento	Redding
64	Sacramento	Redding
64	Sacramento	San Bernardino
64	Sacramento	San Diego
64	Sacramento	San Luis Obispo
56	Sacramento	Torrance
56	Sacramento	Truckee
56	Sacramento	Truckee
56	Sacramento	Truckee
64	Sacramento	Walnut Creek
56	San Bernardino	Bakersfield
56	San Bernardino	Barstow
56	San Bernardino	Bishop
56	San Bernardino	Fresno
56	San Bernardino	Indio
56	San Bernardino	Sacramento
56	San Bernardino	San Diego
56	San Diego	Rancho California
56	San Diego	Santa Ana
56	San Luis Obispo	Ventura
56	Walnut Creek	Burlingame
56	Walnut Creek	Eureka
56	Walnut Creek	Redding
56	Walnut Creek	Sacramento
56	Walnut Creek	San Luis Obispo

Table 3.1.3j

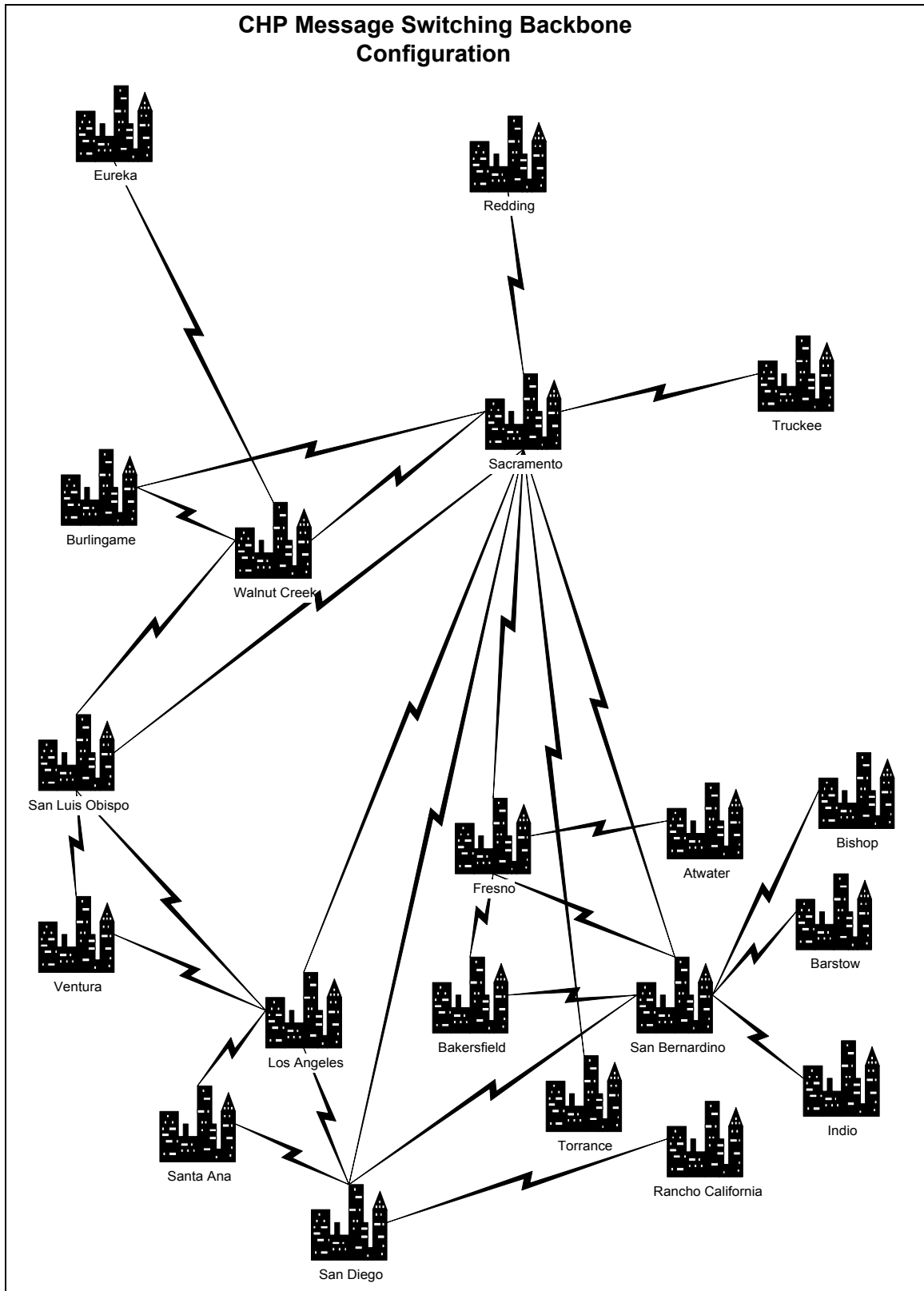


Figure 3.1.3j

3.1.4. Costs of CALNET Suite of Services

After the CALNET contract was awarded to GTEL, DGS/TD followed common industry practice and the recommendations of private sector experts by buying the necessary switching equipment. DGS/TD purchased the necessary hardware, software, training, and professional services on an installment plan, for a total of approximately \$27.8 million in FY 92/93 and \$6.9 million at final acceptance of GTEL's deliverables. The principal and interest are approximately \$4.6 million annually and are included in CALNET's billing.

Table 3.1.4a illustrates the major services administered by DGS/TD with their associated annual billing. The billing includes all costs for contracts, staff, operations, and statewide administration.

Service	Annual Billing for Service
InterLATA Long Distance Service	\$18,742,000
Local Consolidated Service	\$33,453,000
Data Services	\$ 4,970,000
Voice Mail Services	\$ 4,746,000
Local Long Distance Services	\$ 6,396,000
Total	\$68,307,000

Table 3.1.4a - Major Services Administered by DGS/TD

The services are administered through a combination of multiple outsourced contractor agreements and some state staff using state owned equipment. Table 3.1.4b shows the extent of the outsourcing administered by DGS/TD. The table's purpose is to show the value of DGS/TD partnerships with the private sector in providing CALNET's services. The table identifies the agreement, the annual contract value, expiration date, and the contractor.

DGS/TD has chosen to rely upon multiple service agreements for the following reasons:

- To exploit the expertise and pricing that is available in the marketplace.
- To encourage competition between service providers.
- To contract for services in manageable pieces, which facilitates management oversight and minimizes possible service disruptions during conversions resulting from new competitive bids.

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Of the total service administered by DGS/TD listed in Table 3.1.4a, DGS/TD bills for only \$30 million of the services. The remainder of the services are billed directly to the Agency by the contractor providing the service. Table 3.1.4c lists the major services billed by DGS/TD with their associated annual billing. The established rates are intended to cover DGS/TD's staff costs, operating costs, debt service, and other pro rata overhead.

Agreement	Annual Contract Value	Expiration Date (FY)	Contractor(s)
Operations and Maintenance	\$4,590,000	1997/98	GTE
CentraNet*	\$1,157,000	1996/97	GTE
Centrex*	\$25,443,000	1996/97	Pacific Bell
Voice Mail *	\$4,746,000	1996/97	Pacific Bell & GTE
Frame Relay *	\$2,700,000	1999/00	Pacific Bell
InterLATA Private Lines	\$2,700,000	1998/99	MCI
IntraLATA Private Line	\$1,540,000	1997/98	Pacific Bell
IntraLATA Services*	\$4,398,000	Monthly	Various (Pacific Bell, GTE, Contel, Roseville Tel, et al.)
IntraLATA Long Distance*	\$6,396,000	1998/99	Pacific Bell & GTE
CALNET Fiber Access**	\$1,762,000	1999/00	Pacific Bell
Total Annual Contract Value	\$55,432,000		

*These DGS/DT contracts include services which are billed directly to customer agencies by the contractors.

** Early termination penalties apply to this contract if canceled prior to term.

Table 3.1.4b: DGS Telecommunications Division Contracts

Service	Annual Billing for Service	Percent of Total Revenue
InterLATA Long Distance Service	\$18,742,000	62%
CALDEX (includes voice mail for CALDEX customers)	\$6,624,000	22%
Data Services	\$4,970,000	16%
Total	\$30,336,000	

Table 3.1.4c: CALNET DGS/TD Billing by Service

3.1.5. System and Usage Volumes

DGS/TD manages two basic types of services. Those provided under contract directly to the government user by the contractor and those provided directly by DGS/TD. Both of these services are managed by DGS/TD and are included in this RFI as a part of the total CALNET suite of services.

3.1.5.1. Contracted Services

The following is a list of the contracted services with the present estimated usage levels of each service:

3.1.5.1.1. DGS/TD Consolidated Pacific Bell Centrex Service

These are consolidated Centrex locations managed by DGS/TD. The majority of these users fall within DGS/TD's administrative oversight. Table 3.1.5.1.1 lists each location and their associated number of lines.

3.1.5.1.2. Pacific Bell Centrex Service - Stand-alone non DGS/TD Managed

These are Centrexes using the existing DGS/TD agreement with Pacific Bell. They are not consolidated DGS/TD Centrexes. Many of these sites are typically managed by governmental agencies outside of the administrative oversight of DGS/TD. Some of these locations are managed by state agencies under delegation from DGS/TD. Table 3.1.5.1.2 lists each location and their associated number of lines.

DGS/TD Consolidated Pacific Bell Centrex Service Locations

<u>Location</u>	<u>Lines</u>	<u>Location</u>	<u>Lines</u>
Auburn	351	Palo Alto	50
Bakersfield	717	Redding (02)	4,332
Berkeley	2,106	Redding (11)	668
Canoga Park	344	Riverside	1,535
Chico	1,727	Roseville	250
Clovis	122	Sacramento (01)	36,506
El Monte	1,207	Sacramento (02)	113
Eureka	2,202	Sacramento (03)	1661
Fair Oaks	1,517	Sacramento (11)	6,347
Fairfield	679	Sacramento (12)	3,372
Folsom		Sacramento (13)	1,555
1,033		Salinas	158
Fremont	488	San Diego (1)	952
Fresno	1,910	San Diego (11)	55
Fullerton	3,376	San Diego (2)	1,088
Gardena	293	San Diego (3)	1,255
Glendale	683	San Francisco (4)	1,093
Inglewood	284	San Francisco (6)	180
Lodi	77	San Francisco (21)	3,617
Los Angeles (03)	623	San Jose (02)	4,743
Los Angeles (06)	279	San Jose (21)	962
Los Angeles (09)	553	San Luis Obispo	1,020
Los Angeles (11)	1,379	San Mateo	611
Marysville	1,512	Santa Ana (1)	1,110
Merced	407	Santa Rosa	1,459
Modesto	293	Stockton	1,255
Monterey	686	Ukiah	1,599
North Sacramento	4,324	Vallejo	1,280
Northridge	24	Van Nuys	724
Oakland (03)	4,310	Ventura	633
Oakland (11)	316	Yountville	631
Oakland (12)	484	Yuba City	857
Oroville	268		

TOTAL CENTREX LINES: 117,245

Table 3.1.5.1.1

Pacific Bell Centrexes Under Contract Not Managed By DGS

<u>Location</u>	<u>Lines</u>	<u>Location</u>	<u>Lines</u>	<u>Location</u>	<u>Lines</u>	<u>Location</u>	<u>Lines</u>
Anaheim	58	Esparto	22	Modesto	16	San Fran (13)	159
Anderson	174	Fairfield(01)	787	Monterey City	393	San Fran (19)	278
Arcadia	248	Fillmore	87	Mountain View	834	San Leandro	46
Arcata	187	Forrestville	55	SLOCnty	10	SLO County	3,941
Arroyo Grande	631	Fort Bragg	265	Napa State Hos	1,075	San Marcos	833
Atascadero	411	Fresno(11)	53	Nevada City	88	San Mateo	424
Atascadero	1,036	Fresno(12)	25	Newcastle	23	San Mateo Co	311
Atwater	96	Fresno(14)	31	North Sac (11)	189	San Rafael	389
Benicia	109	Galt	30	North Sac (12)	26	Santa Clara	59
BuenaPark	167	Gardena(01)	1,069	Oakdale	86	Santa Cruz(1)	161
Burbank	128	Georgetown	38	Oceanside	107	Santa Cruz(11)	68
Burlingame	181	Grass Valley	61	Ojai	136	Sonoma Co.	523
Calabasas	18	Gustine	24	Oakview`	1	Soda Springs	56
Calexico	75	Half Moon Bay	140	Orange	287	Sebastopol	181
Calistoga	53	Hayward	83	Oranecove	21	San Bernardo	111
Cambria	24	Healdsburg	263	Orland	181	Simi Valley	122
Carson	101	Hercules	33	Otay	21	South Gate	324
Castiac	9	Hollister	304	Pasadena	437	S LakeT ahoe	401
Chowchilla	43	Hollywood	181	Patton	107	St.Helena	108
ChulaVista	91	Huntington Pk	147	Petaluma	219	Standford	117
Cloverdale	42	Irvine	1,196	Placerville	65	Templeton	80
Clovis	291	Lakeport	70	PalmDale	16	Tiburon	38
Coalinga	132	Lamont	43	Porterville	853	Torrance	210
Compton	79	Larkspur	131	PasoRobles	136	Truckee	267
Concord	248	Lawndale	63	Quincy	384	Turlock	1,017
Corning	42	Lincoln	144	Rnch Bernardo	72	Tustin	36
Corona	62	LiveOak	50	RedBluff	272	Ventura(11)	212
Cotatti	38	LA (07)	337	Redwood City	87	Ventura(2)	452
Carlsbad	84	LA (12)	35	Riverbank	48	Moore Park	52
Culver City	258	LA (15)	138	Rocklin	201	Visalia	390
Davis	256	LA (34)	29	Rosemead	206	Watsonville	365
Diamond Hills	13	LA (35)	179	Salinas	301	Weed	33
Dixon	43	Loyalton	59	Salinas(12)	38	W Sacramento	315
Downville	18	Madera	37	San Carlos	4	Wheatland	40
El Cajon	110	McKinlyville	71	San Diego(12)	84	Willows	287
ElCentro	90	Mendota	41	San Diego(16)	215	Windsor	63
El Dorado Hills	13	Merced(01)	254	San Diego(6)	146	Winters	57
El Segundo	1	Mill Valley	79	San Fran (5)	109	Walnut Creek	191
Escondido	90	Milpitas	452	San Fran (17)	103	Woodland	135
						Yreka	324

TOTAL CENTREX LINES: 33,797

Table 3.1.5.1.2

3.1.5.1.3.GTE CentraNet Service

These are consolidated CentraNet locations managed by DGS/TD. The majority of these users fall within DGS/TD's administrative oversight..

DGS/TD Managed Locations

Long Beach	819
Santa Barbara	305
San Bernardino	1,025

TOTAL DGS/TD CENTRANET LINES: 2,149

Non DGS/TD Managed State CentraNet Lines: 7,574

Non DGS/TD Managed Local Government Lines: 1,257

TOTAL CENTRANET LINES: 10,980

3.1.5.1.4.Pacific Bell Voice Mail Service

Southern California	9,827 Mail Boxes
Northern California	47,505 Mail Boxes
TOTAL Mail Boxes	57,332

3.1.5.1.5.GTE Voice Mail Service

Southern California	1,543 Mail Boxes
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3.1.5.1.6.IntraLATA Long Distance Service

Pacific Bell Territory	44 million minutes per year
GTE territory	9 million minutes per year

3.1.5.1.7.Frame Relay Service

- 1,183 PVCs statewide and growing at 8-10 per business day
- 900 DS0 and 571 T1 access lines

3.1.5.2.DGS/TD Provided Services

The following is a list of the services provided directly by DGS/TD and the associated usage:

3.1.5.2.1. Long Distance Usage

CALNET carries 215,000,000 minutes of annual usage which includes almost 3,000,000 minutes per year of calling card usage. The state is in a program to migrate an additional 37, 000,000 minutes of annual state usage on to the network. It is important to note that of the total 215,000,000 annual minutes, almost 10% (21,300,000) are local government users. The local government user minutes cannot be included in any guaranteed user base of minutes. These minutes are available for the winning contractor to capture along with the other local government users throughout the state.

3.1.5.2.2. CALNET Trunking

The CALNET network consists of over 10,000 trunks connecting three major nodes, five minor nodes, seven local concentration points, 103 Centrexes and PBXs, 61 Feature Group D Trunk Groups, 40 Feature Group B Trunk Groups, and 19 T1s for Frame Relay transport. These combine to provide statewide telephone and data services to state agencies. Figure 3.1.5.2.2 shows the CALNET backbone transport configuration.

3.1.5.2.3. Local Telephone Service - CALDEX

DGS/TD provides local business telephone service, similar to Centrex, to state agencies in Sacramento, Los Angeles, San Francisco, and San Diego. This is known as **CAL**ifornia **D**igital **EX**change (CALDEX). Included in the service is the use of NORTEL proprietary telephone sets to provide enhanced services to users. The sets are purchased by the using agency. Table 3.1.5.2.3 is a list of the total current quantity of lines by location and the number of proprietary sets included in the line count:

Location	Lines	Proprietary Sets
Sacramento Capitol Complex	24,213	2,208
Sacramento DMV Complex	4,110	38
Sacramento DGS/TD Complex	1,091	150
Los Angeles Complex	6,681	1,040
San Francisco Complex	4,011	152
San Diego Remote Site	1,031	108
Total CALDEX Lines	41,137	3,696

Table 3.1.5.2.3

In addition to those lines listed in Table 3.1.5.2.3, DGS/TD is in the process of adding a new CALDEX site in Oakland. It is scheduled to cut over in April 1998 with 2,300 new lines.

In each of the major CALDEX sites the Division has installed tie lines to the local consolidated Centrex service in the area to provide a wide area calling arrangement.

3.1.5.2.4.State Owned Voice Mail Services

DGS/TD owns an Octel voice mail system that serves 900 of the Sacramento CALDEX users. The remainder of the Sacramento CALDEX users and CALDEX users in Los Angeles, San Francisco, and San Diego requiring voice mail obtain the service through the Pacific Bell voice mail agreement. In addition to this voice mail equipment, some agencies have also acquired separate equipment. The following are examples and estimated quantities:

DMV	1,047 Mail Boxes
CalTrans	1,418 Mail Boxes
Department of Insurance	1,288 Mail Boxes

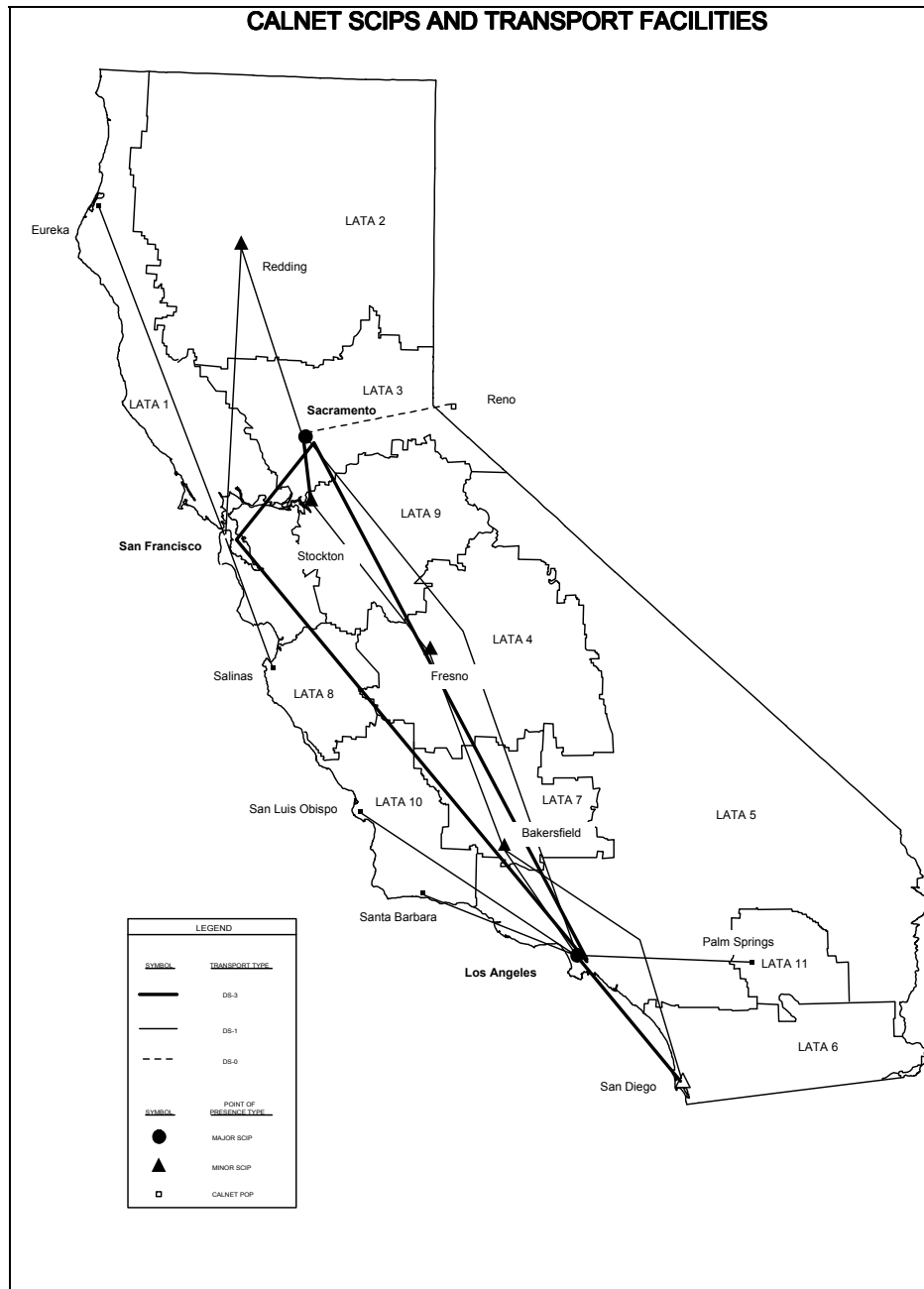


Figure 3.1.5.2.2

3.1.5.2.5. Frame Relay Services

DGS/TD provides the interLATA transport for the Frame Relay services provided through an agreement with Pacific Bell. Today the service supports over 1,100 Permanent Virtual Connections (PVCs) for various state agencies

throughout the state. DGS/TD provides a dedicated connection from the State Carrier Interface Points (SCIPs) to the Pacific Bell Frame Relay switch in the LATA. The CALNET transport network provides the interLATA connectivity necessary to ensure reliable end to end Frame Relay service. Figure 3.1.5.2.5 depicts the DGS/TD provided backbone structure based on existing service. DGS/TD is working closely with HWDC and Teale Data Center to add approximately 2,300 additional PVCs to this network within the next year.

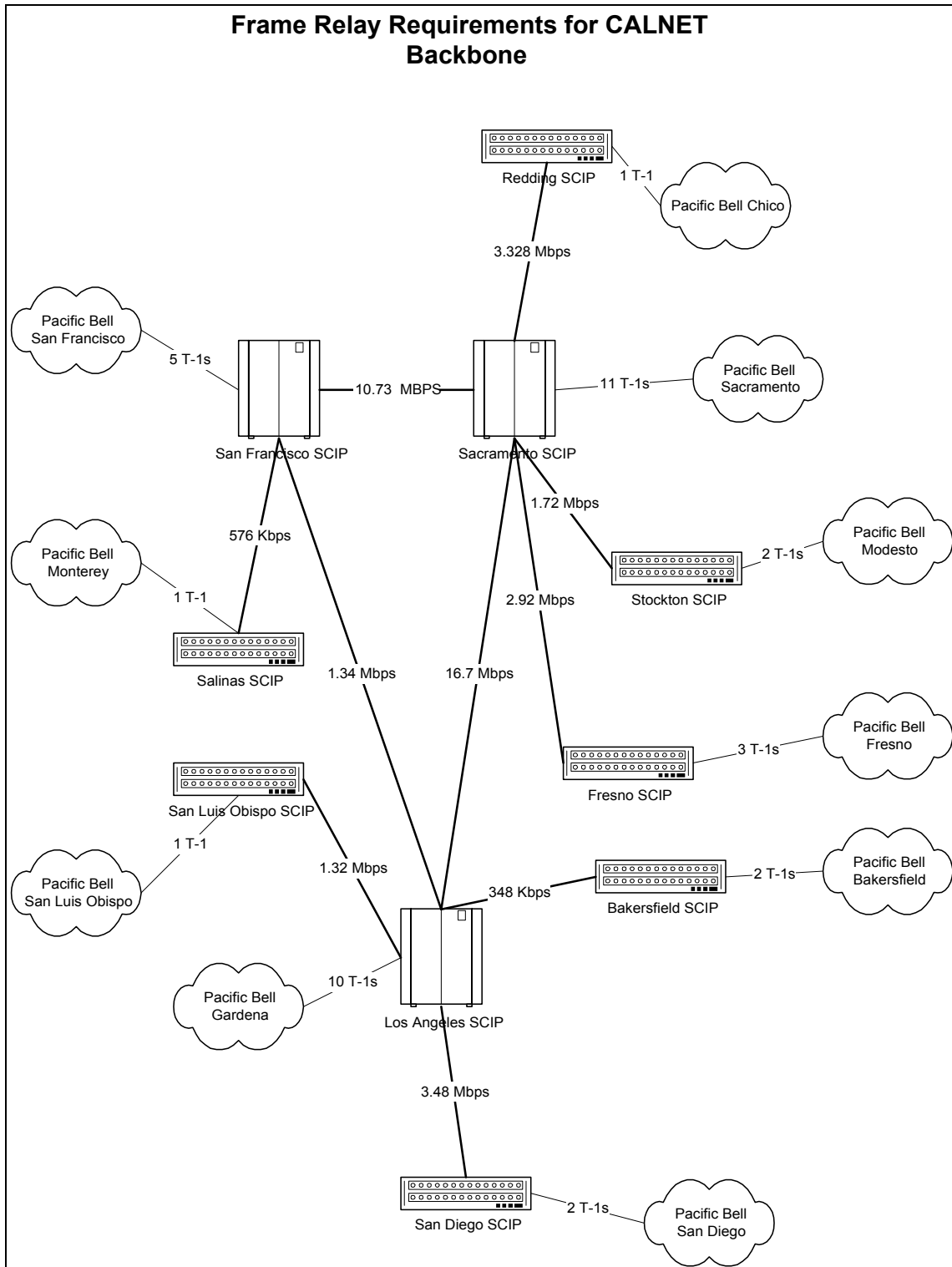


Figure 3.1.5.2.5

3.1.6. End-User Support

DGS/TD provides consolidated services to agencies either directly or through competitively established contracts. Based on the complexity of the service, associated technology or a need for more direct management and oversight, agencies may be required to submit requests for certain services to DGS/TD for review and approval prior to obtaining the service. Once approval is granted, TD would either acquire the service for the agency or authorize the agency to acquire the service via other approved procurement processes. Such services are referred to as “non-delegated”. For services not requiring such review, agencies may be granted (or delegated) authority to obtain identified services by submitting requests, according to established procedures and terms and conditions of the contract, directly to the contractor. These services are referred to as “delegated”.

3.1.6.1. Contractor Provided Services

When services are provided to agencies through a contractual arrangement, the contractor is expected to provide a variety of activities in support of the agencies. These activities generally include:

3.1.6.1.1. Customer Contact Representative

The contractor representative is the primary point of contact for service information and escalation for unresolved service support issues.

3.1.6.1.2. Planning and Design

The contractor representative assists the agency with identification of service applications for contracted services to support the identified business needs and provides information on pricing, configuration, related requirements and the timeline for implementation. As needed, additional contractor technical resources or service specialists may also participate in this process.

3.1.6.1.3. Provisioning and Implementation

If the agency proceeds with the request, the contractor representative (as necessary) assists with the completion of the service request forms and coordinates with the provisioning and implementation functions within their company to ensure service is installed as requested and within established timeframes. The contractor performs tests according to established practices to verify that the

installed service is functioning properly and notifies the agency of service completion.

After initial line installation, agencies with an Administrative Service Management System (called by various names depending on the service provider, i.e.; Cenpac, Centrex Management System, etc.) can activate basic and enhanced line features. The system also allows agencies to exchange existing telephone numbers from one location to another and to make certain changes to ACD service. The system avoids use of a service order process, provides next day service, and allows agencies, at a minimum, to directly:

- Manage features on working lines,
- Add, move and change station features,
- Exchange existing telephone numbers,
- Generate standard and ad hoc reports on managed agency service.

3.1.6.1.4.Trouble Reporting

The contractor provides trouble reporting procedures and telephone numbers to the agency and also provides an escalation procedure and contacts for unresolved problems.

3.1.6.1.5.Training

The contractor provides user training (as applicable) and instruction materials for the contracted services. Optional training methods such as video tapes and instruction levels are available. For some situations the contractor trains customer designated staff who in turn provide end user training. In other situations the contractor may directly train the end user on the services.

3.1.6.1.6.Billing

As established by terms of the contract, the contractor bills the agency directly for services. Billing systems offer a variety of customer selected options for format, billing cycles and electronic media. Contractors provide a telephone number and trained staff for billing inquiries and problem resolution.

3.1.6.2.DGS/TD Provided Services

3.1.6.2.1.Planning

DGS/TD assists state agencies in telecommunications service planning through acquired expertise in industry-wide trends, technology, and business practices together with a strong focus on customer needs and a knowledge of operational requirements. DGS/TD also uses agency focus groups and planning forums as a means to develop tactical plans for service.

3.1.6.2.2.Consulting

Agencies are assisted in using the suite of CALNET services as an enabler to meet business objectives. Through use of “business consultants”, the users’ business requirements are analyzed, solutions recommended, and conceptual design of service application completed. Additional service and product information is provided through the State Telecommunications Management Manual and periodic product service announcements.

3.1.6.2.3. Design

DGS/TD provides technical design consulting to agencies for complex systems applications. End-users requiring expertise in telecommunications use DGS/TD staff to help develop a business solution that takes advantage of the available telecommunications alternatives. This could range from helping to configure an Automatic Call Distribution (ACD) system to helping design and obtain a new data communications service.

3.1.6.2.4.Provisioning

Provisioning includes the development of technical specifications for the installation of complex services as well as the coordination with external resources for the installation of those services.

After initial line installation, agencies with an **Administrative Change Order System (ACORDS)** can activate CALDEX basic and enhanced line telephone features. The system also allows agencies to exchange existing CALDEX telephone numbers from one location to another and to make certain changes to ACD service. The system allows CALDEX agencies to avoid having to

process a request through DGS/TD's Client Service Center, provides next day service, and directly:

- Manage features on working CALDEX lines,
- Add, move and change station features,
- Exchange existing telephone numbers,
- Generate standard and ad hoc reports on managed agency service.

Through a polling process, the system looks for agency requested changes, downloads the changes to the CALDEX switch and then updates the agency's ACORDS database. ACORDS functionality is provided through the use of American Telecorp's Cenpac product.

3.1.6.2.5.Client Service Center

DGS/TD operates a Client Service Center (CSC) whose purpose is to focus directly on service issues from the client's perspective. This emphasis facilitates client friendly business processes and transactions. The center has staff experienced in both technical and business processes, and their duties emphasize direct involvement with clients and their service needs. Some of the major functions of the CSC are described below.

3.1.6.2.5.1.Service Order Function

DGS/TD operates a service order function that is a single point of contact for the receipt and logging of client orders, entering order actions into automated provisioning processes, and assisting the client in the determination of technical implementation details. The service order operation also directly provisions standard pre-designed voice and data private line services.

3.1.6.2.5.2.Contract MAC Service Oversight

DGS/TD has an independent contractor that provides Move, Add and Change (MAC) services for all CALDEX service locations. The CSC oversees these client transactions including the receipt of orders and the tracking of their completion.

3.1.6.2.5.3.Provisioning Coordination

The CSC provides the coordination between the MAC activities and other service provisioning activities as required. In addition to coordination of MAC activities, the CSC is responsible for coordination of standardized voice and data private line service provisioning. This coordination includes the placing of orders for contracted facilities, coordination of contractor and internal State provisioning actions and the arrangement of final circuit testing. A major objective of the provisioning coordination is to assure, by project, that involved provisioning contractors are responsive to project schedules, scope of task, level of effort, and expected quality of service.

3.1.6.2.5.4.CALNET Service Training

The CSC provides or arranges training for CALNET clients and CALNET staff on the methods of operations and feature functionality of provided services. The service training is offered to the client in association with all instances of new and modified service or as requested.

3.1.6.2.5.5.Ombudsman/Client Advocate

The Ombudsman is an advocate for clients with problems pertaining to offered services, or in facilitating communications regarding concerns about offered services. The service advocate function can be directly initiated by clients, or by internal staff observing either service provisioning or reported trouble resolution difficulties. The ombudsman has the service expertise and the contacts to facilitate the resolution of difficulties outside of normal service order and trouble reporting processes.

3.1.6.2.5.6.Information Desk

The Information Desk receives client queries on service provisioning processes, service function and features, service order status, service type availability and rates, and general business practices and contacts.

3.1.6.2.5.7.Help Desk

The Help Desk receives client reports of service difficulties, and provides trouble resolution status reports including the estimated times for trouble resolution.

3.1.6.2.5.8.Client Service Improvement Program (CSIP)

This program solicits client inputs and discussions regarding their experiences with service quality, service effectiveness, perceived service needs and business processes. This program gathers client suggestions for service offerings and business practice improvements for implementation consideration.

3.2. State Telecommunications Network Management & Control Systems

3.2.1. Overview of Current Network Management Systems

The Network Management System (NMS) is the primary interface to the operational elements of CALNET. The NMS facilitates the movement of information and the exercise of control over all aspects of the network and the management structure responsible for providing State telecommunications services.

The NMS software system is modular in nature and serves to minimize human operator and maintenance resource requirements.

The NMS utilizes Open Systems Interconnection standards for integrating management and control functions for network elements and processes.

The NMS provides the following functions with appropriate application software:

1. Network status and monitoring
2. Network diagnosis and control
3. Fault management
4. Resource and provisioning management
5. Network planning and configuration modeling
6. Network administrative support
7. On-line "Help" guidance and on-line training
8. On-line system and configuration information

9. On-line access to network component service and operation manuals.

The NMS facilities operates with back up power systems and employs hardware and software redundancy. This ensures a single point failure will not result in lost data, and that service impact is minimized. The redundancy design includes a remote NMS operating in a shadowing mode for all network status and control functions.

3.2.2. Network Status Capability

The NMS provides real-time collection, analysis, filtering, programmed responses, history of significant events, and displays conditions of elements and subsystems comprising the network.

3.2.3. Network Data Processing Capability

The NMS incorporates the application processes, data management, and rapid access to collected system and service information in support of network operation and administrative duties. DGS/TD staff have on-line query and management report generation capability through the NMS with access to all accumulated system and service data.

3.2.3.1. Billing

The CALNET Billing functions are currently being performed by two groups. The administrative or oversight functions are being performed by State personnel. These functions include handling agency billing inquiries, maintaining billing and tariff tables, making decisions about agency invoices, processing and printing, etc. The day-to-day collection, processing and monitoring of call records is being performed by contracted personnel. These functions include, monitoring collection of CDR from the MSN switches and PBX's, executing the Tandem "obey" files that execute the CALNET billing programs, running the month-end billing functions, etc.

The CALNET billing system is an integrated set of programs, processes, routines, data files and batch files that format, rate and guide raw call detail records. The system merges this information with corresponding inventory information to produce an invoice to bill agencies for use of CALNET services. The CALNET billing system runs on two computer systems, one located in the DGS/TD Network Management Control Center (NMCC) and the other at the Teale Data Center with different parts of the process running at the separate locations.

The NMCC portion of the system runs on a Tandem Himalayan computer system. This system collects the raw call detail records

(CDR) and writes these records out to file. The CDR data is obtained from a variety of sources, such CALNET MSN CDR, LEC AMA tapes for Centrex/CentraNet data, LEC magnetic tape for operator handled calls from CALDEX lines, IXC magnetic tapes for calls handled in support of the CALNET Calling Card, etc. The Tandem system then formats the CDR records, rates the calls, as necessary, guides the calls for billing to the correct agency, generates statistical reports and error listings and transfers the processed files to the Teale system.

At Teale, the billing processes run on the IBM mainframe. The Teale portion of the billing system receives the rated call records from the Tandem system, removes duplicates and performs final guiding of call records to the correct agency. In addition, Teale programs merge inventory information with call records to produce and print agency invoices with supporting detail, then generate fiscal and management reports for DGS-Accounting. CALNET invoices are generated once a month; and, due to the timeframe required to obtain usage data from the various sources, may contain call records from more than one calendar month. The printed invoices and call detail reports are delivered to DGS/TD where they are assembled and mailed to clients. Some agencies receive the call detail information on alternative media.

3.2.3.1.1. Direct Transfer

To simplify processing and reduce paper flow and workloads, the Department of General Services (DGS) has implemented a direct transfer system which eliminates the need for agencies to prepare and submit claim schedules and remittance advices to the State Controller for payment of DGS' invoices.

Under the direct transfer system the DGS continues to produce and send individual invoices for services and supplies to its customer agencies. After completion of a month's business, invoice listings are prepared for direct transfer agencies. A listing is prepared for each agency and includes Service Revolving Fund invoices billed to that agency during the month.

Once the invoice listings have been produced, a Request to the State Controller for Transfer to Service Revolving Fund is prepared. A separate transfer request is prepared for each departmental invoice listing and is filed with the State Controller to be applied against that agency's cash advance account. Copies of the transfer request and invoice listing

are also sent to the agencies for information and control purposes.

The direct transfer program is on a voluntary basis; however, many State agencies currently take advantage of this option.

3.2.3.2.Fraud and Abuse Programs

CALNET is committed to keeping toll fraud off its network and uses a combination of network class of service restriction and traffic analysis to reduce the State's vulnerability and losses to fraud. CALNET has traffic monitoring programs and techniques to detect potential fraudulent calling patterns. CALNET personnel review fraud monitoring reports daily. Abnormal calling patterns are promptly investigated and when appropriate, actions are immediately initiated to curtail fraudulent calling.

While toll fraud may generate tremendous telecommunications loss, employee misuse of telecommunications facilities may also be very costly. The personal use of telephones is expensive and may represent a significant resource consumption when both usage charges and productivity losses are considered. For this reason, CALNET also administers a CALNET Abuse Program to assist clients in the identification of calls which may be non job related. Each month, following the CALNET invoicing (billing) process, computer reports are generated listing calls that exceed the abuse monitoring parameters. These computer reports, which list where the calls originated and terminated, are analyzed and forwarded to CALNET clients for review and appropriate action. Upon client request, specific terminating numbers that are determined to be authorized business calls can be excluded from subsequent abuse reporting.

3.2.4. Network Control Capability and Network Control Centers

The NMS provides operations and administrative staff the means for real-time network element status evaluation and control. This includes all the processes involved in system configuration, routing, physical device control and command action verification. This functionality is used to configure operational features and to test and maintain the various equipment and facilities employed in the network.

The NMS uses a Network Interface Module Language (NIML) process to integrate the various application management systems and network subsystems. The NIML process provides the means to integrate any external system or equipment that utilizes either API protocols or any structured communication data stream.

INTEGRATED INFORMATION NETWORK

RFI TD-97-01

The Network Management Control Center (NMCC) houses, on State premises, the equipment and personnel necessary for operational and logistic control of CALNET. State administrative staff and managers access the NMS functionality through administrative support applications on the State's local area network. The NMCC is operated on a seven days a week and twenty-four hours a day (7X24) basis.